THE CONDOR

A Magazine of Western Ornithology

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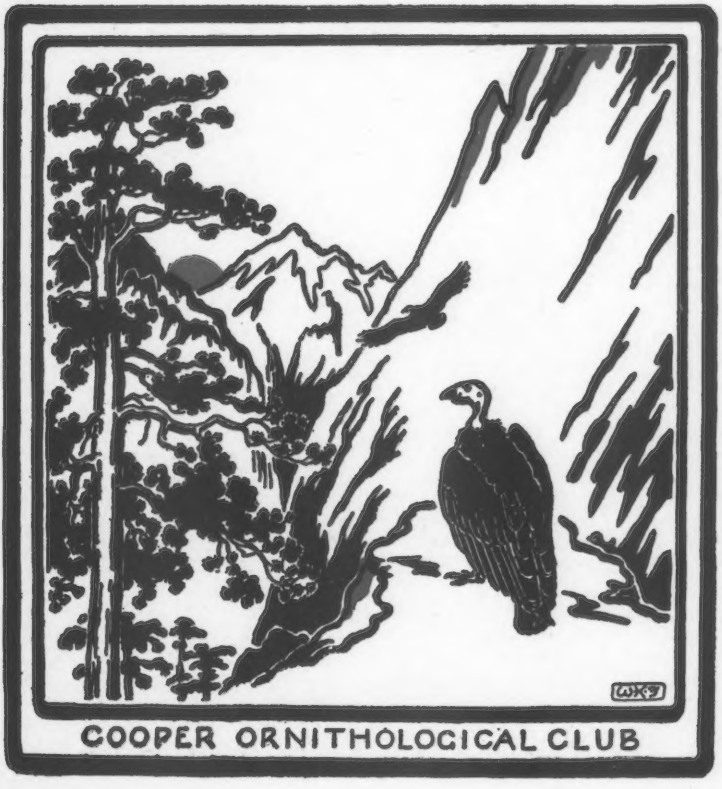

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THE CONDOR

A Magazine of Western Ornithology

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JOHN RIDGWAY'S DRAWINGS FOR THE BENDIRE PLATES

WITH ONE ILLUSTRATION

By HARRY HARRIS

THE VALUABLE and important "Life Histories of North American Birds" now issuing from the United States National Museum under the able authorship of Mr. Arthur Cleveland Bent, of Taunton, Massachusetts, have quite naturally stimulated among other concerns an interest in the study of nesting habits, and have revived the eager desire latent in the breast of every old-time oologist again to take the field for one more haul of treasure. It is sincerely hoped that nothing will transpire to prevent the completion of this desirable series of publications.

Mr. Bent's volumes have focused attention once more on the work of his predecessor in this field. Since the appearance of the first Bent volume in 1919 the demand for Bendire's "Life Histories" has been such as to cause a considerable and steady increase in the price current of this pair of sumptuously illustrated quartos. Happily, these books, owing to a liberal Government patronage of zoological science during those times, are not excessively rare; but because of the generous format and superb plates they will always command a comparatively high price. The work of the author of course needs no commentary, as his eminence in the field of American ornithology has been adequately and ably subscribed to and is universally recognized. Much remains, however, to be said regarding the artist who contributed in such substantial measure to the permanent value and usefulness of the justly famous books.

In his review of the first Bendire volume on its publication in 1892 (Auk, IX, p. 375), Dr. J. A. Allen says: "The illustrations are on a liberal scale, and in execution are above criticism. It is perhaps safe to say that they are the best egg plates, taking the series as a whole, ever produced, at least in this country and probably anywhere." On the appearance of the second volume in 1896 (dated 1895) this same reviewer states (Auk, XIV, p. 104): "Also, as before, the plates are above criticism, and have as yet never been equalled in artistic effect or in faithfulness of execution." In his memorial of the life and work of Bendire (Auk, XV, 1898, p. 1), Dr. J. C. Merrill has to say in connection with the "Life Histories" that "A word as to the plates cannot be omitted. No superior work has ever been done, and no praise can be too great to apply to them. The present writer was in a position to know with what painstaking care and accuracy Major Bendire compared the successive proofs of the plates in the first volume with the individual eggs selected as types, and how often he returned the 'final' proofs to the lithographers for changes in some minute detail

that his critical eye detected." The fact that the Major's highly critical eye failed utterly to detect the least minute variance between the eggs selected as types and the artist's watercolor drawings of them only emphasizes the impossibility of lithographic printing doing more than merely approximating the perfection of original work. In view of these facts it is not at all easy to understand why the important and widely circulated articles quoted overlooked mention of the artist's name.

In a few of the lesser American ornithological magazines, notably *The Osprey* and *The Nidologist,* in reviews signed by Prof. Knowlton and Dr. Shufeldt, respectively, credit is generously given the artist by name. In other widely scattered articles of the time much was made of the superlative quality of the prints and of the unusual number of stones required to attain certain of the color effects, but nowhere has the artist in question ever been accorded the full measure of credit due him for his share in giving oology a classic.

The plates themselves are unsigned, and the student may easily overlook the paragraph at the end of the Introduction in Volume 1 where it is stated that "The original water-color drawings from which the plates have been reproduced were made by Mr. John L. Ridgway, of Washington, D. C., to whose skill and painstaking care the excellence of the illustrations is largely due. The chromolithographic reproductions of these plates were made by the Ketterlinus Printing Company, of Philadelphia, Pa., and it gives me pleasure to say that they are as faithful copies of the original drawings as it is possible to make."

The drawings were made in 1892 and 1893 when Mr. Ridgway was employed as a scientific draughtsman in the Geological Survey, in Washington, where since his arrival in 1881 he had been receiving inspiration and guidance from his older brother Robert, his sole instructor, in the mastery of his difficult and exacting technique. The Ridgway brothers during this period were marking an epoch in the development of avian delineation on this side of the Atlantic, and whoso shall come to do the interesting story of this development from the time of Mark Catesby down to the present school of accomplished artists shall have to weigh carefully the achievements and the influence on American bird portraiture of these two patient workers.

John Ridgway has been employed for many years, in addition to his regular work, by the Carnegie Institution, and for the past seven years he has maintained a studio in the Los Angeles Museum accessible to the Pleistocene fossil material which has occupied his attention exclusively for some time. It has been the privilege of the writer for the past year to enjoy daily contact with the artist, and advantage has been taken of the friendly intercourse to gather some facts that it is believed are worth recording. After much persuasion Mr. Ridgway has reluctantly consented to allow the use of his own words which will doubtless be appreciated by those readers of THE CONDOR who realize the remarkable merit and importance of the results achieved by him in the plates under discussion. He says:

"Like most scientific illustrators I have always been actuated in attaining results by something more than merely working to earn my income. Above all else there is always the great desire to produce something worthy of the author's text. I am sure that my failures have more than balanced any results that have been satisfying to me, and I have always been conscious when my best efforts have failed. In the Bendire drawings, a work for which I can claim only accuracy of delineation—their simplicity rendering any other claim trivial [!]—I had placed my standard high. I wanted to produce drawings as nearly like the original objects as lay within my power to execute. After some experimentation in position, illumination, and certain other subtleties necessary to bring out clearly the form of each egg, the result came as near satisfying me as anything I had done before or have done since.

"All the illustrations of this kind that I had seen appealed to me as being very poor. They lacked first of all the effect of rotundity. As to their accuracy I had no way of judging. Having been accustomed to drawing specimens and objects in great detail I saw no difficulty in that; but to produce the shadows necessary to make the eggs appear full and properly rounded without modifying the local or ground color appeared to me somewhat of a problem. I also encountered an additional difficulty in rendering dark markings directly over high lights.

"My first experimental drawing was to the end of developing a satisfactory system of shading. During this work it was found that an egg suspended in the air was less affected by reflections from surrounding objects than in any other position, and in order thus to place the egg for drawing, a wire holder was devised with a forward bent loop at one end and a sharpened point at the other. By the use of this simple device the light and shade, which was governed by a window on my left, proved to be perfect, and it was found that the shadow perspective toward the edges was particularly clear—a sufficient reflection from other parts of the room giving the slight halo near the outline that was desired.

"Having produced what seemed to be a satisfactory shaded drawing, the next experiment was in color perspective, by which any dark marking, for example, passing around the shaded side of the egg would grow slightly lighter as it neared the edge. The most difficult feature of the work, however, was in connection with the high lights. A dark patch or marking directly over that part of the specimen so illuminated would, unless handled just right, entirely obscure the light. With some practice it was found that by matching exactly the peculiar sheen displayed at that point on the specimen a satisfactory effect was produced, though it is not always well shown in the lithographs. (Mr. Ridgway has made the accompanying drawing [fig. 57] especially to illustrate here the above points.)

"The matter of producing a ground color unaffected by shadow was overcome by the use of an opaque wash of the exact color over the entire surface of the drawing (except the area of high light), which had been previously shaded with a tint composed of red, blue, and yellow applied in the proper proportions that always give the true shadow of any colored object.

"The original drawings from which the plates in Bendire's *magnum opus* were reproduced were made in 1892 and 1893. I was then regularly employed by the Geological Survey in Washington. Captain Bendire (then a retired Army Captain, later breveted Major) was, as is well known, Honorary Curator of Oology in the U. S. National Museum. My office hours in the Survey were from 9 until 4. This gave me opportunity to do some outside work on my own time, and having already become fairly well known among the scientific group in Washington, I was asked to undertake the egg drawings, the work being done on requisition furnished by the National Museum where I had at one time been regularly employed. I had at this time done some bird drawings and a great deal of miscellaneous illustrating in other branches of natural history.

"I well recall the first lot of specimens selected for me. The Captain had been so accustomed to dealing with subordinates that he had very little to say to me except that I should be very careful with the specimens and never leave them uncovered during the night or when they were not being used because of the danger of mice destroying them. This admonition, given me in a very kindly spirit, afterwards proved that he not only knew his eggs, but (as will be seen later) knew how to take care of them. For the protection of the specimens in carrying them back and forth, specimens selected with careful discrimination and in many instances representative types and extremely valuable, I obtained a small pine box in which were arranged card-board

partitions similar to those used in commercial egg crates. The box was of a size that would hold twelve or more of the smaller eggs, and when in use was strapped to the handle bars of my bicycle. Each Thursday or Friday morning or evening (except one!) during the course of the work I would ride over to the Museum where the Captain would always be ready to compare my drawings and refill my specimen box. I do not recall that there was ever a criticism of any of the drawings although each one was compared very carefully before the specimens were returned to the cases. One morning, however, I appeared on the scene ahead of my regular time. I had worked late the previous evening and had evidently forgotten to close tightly the lid

Fig. 57. Egg of Sooty Tern from wash drawing by John L. Ridgway.

of the little box. Next morning when I started to resume my work I discovered to my amazement that there were bits of egg shells scattered around in the drawer, and upon opening the box I found that all the eggs had been badly cracked or broken to pieces. The mice had done their work and had done it well without my being aware of their presence in my rooms! My first thought was of probable execution at sunrise before a firing squad. This retired Army Captain and Indian fighter had the reputation of being a most strict disciplinarian, and I reasoned that this serious loss of his treasures was certain to bring down thunderous retribution on my head. However, this worried me considerably less than that he might charge the disaster to downright carelessness on my part. I resolved to return the box and fragments at once and explain the matter as best I could. When I entered his office he looked at me in the

greatest surprise, for he did not expect me on that day. I greeted him as usual and then proceeded, in I fear a not very reassuring manner, to tell my story. I particularly noticed that as I talked he walked back and forth, his hands behind him, and, as I thought, in great agitation. When I had finished, for there was very little to say, he came over, quietly picked up the box and without a word selected new specimens. He told me afterwards that he knew the moment I entered the room that something of the kind had happened, but he never alluded to it again during the progress of the work.

"Having so little time at my disposal, the work for each volume occupied several months before completion. The plates were finally made up or assembled by Captain Bendire himself, and were reproduced by the Ketterlinus Printing Co., of Philadelphia. I was informed that a lithographer was brought over from England especially to prepare the color stones, of which there were as many as eighteen needed to reproduce some of the plates."

It is believed to be universally recognized that oology has little of intrinsic value to offer science, though the accumulation of egg collections has ever been one of the more engrossing enthusiasms of ornithologists. It may be called quite appropriately the kindergarten of ornithology, since there have been few serious workers in the science who have not been led into their life's work through a boyhood mania for collecting eggs. The great number of collections in private hands, no less than the Government regulations necessary to limit these, testify to the wide appeal of oology. This appeal has resulted in an immense bibliography of the subject, comparatively little of which has originated in America, especially as regards worthy illustrative material. England and Germany especially have contributed to it voluminously, the same subjects being repeatedly pictured in books and periodical literature with a steadily improving quality and effectiveness.

Owing to the exquisite beauty of eggs and to the variations in color, form, markings, and size in individual species, oology lends itself particularly well to illustration. Of the many printing processes that have been employed in portraying these subjects, among which may be mentioned hand-colored prints from wood blocks, copper plates engraved and etched by several methods, and lithographs, as well as colored prints by chromolithography and by the modern process of multi-plate photo-engraving, chromolithography stands unique and supreme in its possibilities for rendering all desired effects. The ultimate perfection possible of attainment by this expensive and laborious process is exhibited in the Ridgway plates.

In conclusion it may be said that no matter from what standpoint these plates be critically examined, the reaction cannot fail to be the keenest appreciation for their immaculate beauty, brilliance, and exactitude, and wonder at the faultless technique of the hand that executed the original drawings. That they constitute the outstanding and preëminent achievement in the entire field of oological illustration will with difficulty be controverted.

Eagle Rock, California, May 30, 1927.

CORMORANTS IN RELATION TO FISHERIES

By ARTHUR H. E. MATTINGLEY

BEFORE THE ADVENT of the white man in Australia both fishes and cormorants in our island continent abounded plentifully. Now after a decade of the white man's abode we find that fishes are not so plentiful, and cormorants are also less plentiful because they have been ruthlessly destroyed by man because they are seen by him to eat fish and are therefore anathema. If fish are not so numerous and cormorants likewise less numerous, it is reasonable to expect with the diminished numbers of cormorants that the supply of fishes would correspondingly have increased; but such is not the case. Therefore, let us look for the reasons why this anomaly exists and why nature has become unbalanced to some extent.

One naturally asks what constitutes the "balance in nature". Briefly, it is the result of constant striving of plant and animal life to multiply their numbers for the perpetuity of their species, but the creatures that feed on them operate continually to check their undue increase. An equilibrium tends to be realized. This action and re-action of natural forces constitutes what is known as the balance in nature.

In what way do cormorants help to balance nature and how does this bird assist in keeping up a supply of our fishes for the use of man? This I will endeavor to answer in this article and to show how unwarranted is the destruction of this bird, even though it does live principally on fish for part of the year; and I will also give my field observations which disprove that it has a voracious appetite, as some persons suggest when condemning the bird. There are several species of cormorants inhabiting the Commonwealth of Australia with which I will deal, and my remarks apply to all of them. The species are: *Phalacrocorax carbo, P. ater, P. fuscescens, P. varius,* and *Microcarbo melanoleucus.*

To make the statement before a body of anglers or fishermen that cormorants are among the best friends of our fishes is provocative of a retort which is summed up in one word spelled with three letters. To prevent such a retort from thoughtless persons I have considered it advisable to prelude my paper by pointing out the error held in common by anglers generally, as well as by some ornithologists and others who have made but a superficial study of the life history of some of the species of our Australian cormorants, and so conduct the thoughts of those persons inclined to make such an abrupt retort into the consideration of the sequence of my remarks before they formulate a definite opinion. We are naturally too prone to jump to conclusions, and to not only take for granted that the traditions as handed down to us from our ancestors are correct, but we judge one particular act of an animal or bird as comprising the whole method of its life history, because we happen to observe only that one phase of its habits which continually re-occurs; as for example the eating of fishes by cormorants.

I hope, therefore, in this short paper to show how unwarranted is the general opinion held that the cormorants are decreasing our fish supply. "Give a dog a bad name and it will stick to him", is a truthful enough adage, although the dog may be an excellent creature in many ways; but in common justice and equity we should judge only where we can see everything and understand it. In the contemplation of the fish-eating habits of the cormorants let us not apply the adage as applied to our canine friend, lest we do both ourselves and the cormorants an injury.

An apt simile occurs to my mind at this juncture. A naturalist was wandering through the fields with a friend who casually drew his attention to a plant, and referred to it as a weed. "You only call it weed", said the naturalist, "because you do not as yet know its value to the community." Some years later a chemist discovered that the so-called weed was an herb, whose medicinal properties cured one of the fellest diseases of the human race. I hope therefore that this essay will prove a panacea just as the lorn weed did, and that after this the cormorant will not be a friendless pariah.

For the last thirty-six years I have roamed throughout many parts of the Commonwealth, and have come in contact with cormorants in many places and under diversified conditions, and have, for many years past, made a special study of their nidification, particularly in the vast areas of the River Murray swamps and billabongs, and on certain lakes where these birds are now found nesting in hundreds, but where formerly they were to be counted in their "shaggeries" in thousands. Owing, however, to their ruthless destruction by persons seized with the idea that they were benefiting the fishing industry by destroying the shags, as they term them, they are at present but a tithe of their former numbers.

Fishermen and anglers have, of recent years, complained bitterly of the scarcity of fish, and as is natural, have blamed the weakest creature, and one incapable of defense. Blame all but ourselves—it is but human nature to do so! These persons have not, however, among other causes, attributed the short-sighted policy of the wholesale destruction of the cormorants for part of the decrease in our fish supply, but nevertheless such is undoubtedly a fact. In this paper I hope to be able to convince you that such is the case.

Most of our fresh water fishes spawn in places where there is some cover or protection for their ova, which is usually deposited among the vegetation in swamps or back-waters, where there is a gentle current flowing or rather filtering through, or in streams among the water weed and other aquatic growths that prevent it being swept away into the swifter parts of the current; also the ova may be placed under logs and stones. On account of the immobility of the ova, it is readily preyed upon from below by many kinds of crustaceans, such as yabbies (crayfish), while water tortoise and eels and other fishes dispose of vast quantities of it as well as of myriads of the small and almost helpless fish fry. Statistics collected by expert pisciculturalists and ichthyologists indicate an astounding mortality among the fish ova and fish fry, to an extent almost incredible. The small number of fish that arrive at maturity is out of all proportion to the number of ova deposited. This dire mortality is due to the enemies of the ova and fry, and, if the enemies are not held in check, then there is a serious diminution in the available supply of mature fish. To destroy those creatures that prey upon the enemies of the fish ova and fry is tantamount to destroying the fish themselves, and in the destruction of the cormorants this procedure is exemplified.

To destroy the balance of nature in one direction is merely setting up an evil in another place. We should be sure of our attitude towards a particular animal or plant ere the consequences of our act recoil unpleasantly upon us. The destruction of the cormorants is an example of this contention. Neither ethical nor sentimental regard for birds sways my judgment in this. We must also remember that cormorants are limited in numbers by the law of nature, and do not increase beyond that limit, and we are therefore able to gauge their effect on our fish supply. Cormorants have their natural enemies just the same as other birds and animals, and their increase above the normal number is consequently checked. When approached closely, the shags that build on the reefs and rocky islets in the ocean, take fright and fly away, and should there be any silver gulls (*Larus novae-hollandiae*) and skuas about, the shags' departure is immediately followed by an invasion of these birds; and it is indeed a

sight to see them swoop down upon the shags' nests and demolish both eggs and young birds. The gulls smash the eggs by dropping them on the rocks, after which they eat the contents. The cormorants that nest in inland waters also have their enemies, and it is a remarkable coincidence that a whistling eagle's nest is usually found overlooking their rookeries.

Special observations made by me at the cormorant rookeries situated on inland waters show that they feed their young almost entirely on yabbies (crayfish), frogs, shrimps and young water tortoise. One must remember that at this period the swamps, particularly in the Murray River basin, the greatest waterway in Australia, are annually inundated, and what is dry land for part of the year is then covered with water. It is at this period that the large and mature fishes retire from the main stream and deposit their ova among the aquatic vegetation of the swamps. Crustaceans of many kinds repair also to the swamps at this time, and prey upon the ova and minute fry in an appalling manner, billions of either fishes' eggs or young fishes disappearing into their hungry maws. Water tortoise likewise lay their eggs in the sand adjacent to the swamps, so that their young, when hatched out by the solar heat, can readily find their way to them and banquet upon the bounteous supply of fish eggs and fry.

It is precisely at this period that certain species of cormorants, namely, *Phalacrocorax ater, P. fuscescens* and *P. carbo,* nest together in rookeries in these swamps, well knowing that an abundant harvest of crustaceans is to be reaped from them at this time. The instinctive knowledge of this fact is a necessity to them, since their energies are taxed to their utmost to satisfy the voracious appetites of their young ones. At this period there are no fish of suitable size, such as is commonly captured by cormorants, to be found in the swamps; with very few exceptions, only the large spawning adults are to be found. It is obvious that destruction of fishes by cormorants in these localities does not occur at the nesting period, cormorants disdaining the capture of the small fry when there is a plenteous supply of larger sized and more readily captured, slow-moving forms of life suitable as food for their young ones. Hence the cormorants at this period allow more fish to be hatched out than are eaten by the adult birds throughout the balance of the year, when they prey upon them in their more advanced stages of growth, and when the fishes have a better chance to escape.

Owing to the small size of the ova of fish, a crayfish can easily dispose of 1000 of them each day, and if we take the spawning season, that is, the period that spawn is available, as 30 days, we have a total of 30,000 of potential fishes destroyed by one crayfish in a season. If we again take into consideration the fact that a cormorant captures ten of these crayfish for each of the 30 days, we have the enormous credit to the cormorant's account of 300,000 ova that have the chance of hatching. Now if we take the quantity of fish a cormorant could devour daily as 6 and multiply it by 365 days of the year, we find that a cormorant could dispose of only 2190 fish per annum. The total yearly credit in favor of the cormorant is thus 297,810 fishes: truly a splendid credit balance! It is during the nesting period that cormorants and their young are destroyed wholesale, owing to their being more easily approached at this time—a time at which their usefulness is greatest.

At Lake Wendouree, a large artificial lake in the State of Victoria, English perch and varieties of American trout have been introduced for the benefit of anglers. Cormorants frequent this lake and prey upon the slower moving species of fish, namely the perch. Repeated shooting of the cormorants has proved that the quicker moving fishes escape the attention of the cormorants, which naturally favor the slower moving forms which it is easier for a cormorant to catch. Never once has a trout been found in a cormorant shot on this lake. If you notice a cormorant diving after a shoal of fish in a river or in the sea, you will observe that he reappears many times without

having achieved success. The number of times it dives is out of proportion to the number of fish caught, probably once in six tries being a fair average. This shows that, being a bird, the cormorant is not equal to a fish in its own domain, and that only the weakest and physically unfit fish are usually caught, fish that probably would not be competent to propagate their species, or if they did so, that would beget a decadent stock. This is a question, then, simply of the survival of the fittest. The cormorant is one of those aids to nature by which her balance is kept level as regards the fishes. Cormorants have, therefore, together with other fish eating birds, been evolved by nature for the special work of eliminating those fishes which are unfit to live, and which are unnecessary in her economy.

Other aids are utilized by nature to keep certain species of fishes from increasing in numbers beyond a proper limit, and so other fishes have been ordained to destroy more of their brethren than the cormorants do. Were statistics collected showing the number of fish destroyed in other ways besides being eaten by cormorants, the number tabulated against these birds would be insignificant. "Do not muzzle the ox that treadeth out the corn," is an old time proverb, and one universally admitted to be correct. Why then muzzle the cormorants after they have destroyed such vast numbers of the enemies of fishes? Cormorants are but safety valves in the boilers of nature.

Why don't our anglers utilize the cormorants as do the Chinese, who train these birds to fish for them? The method adopted is to capture the birds when young, so as to accustom them to handling, and then they are taken out in the boat with experienced adult birds which teach them how to catch fish. After the younger birds have become expert fishers, the Chinaman slips a rubber ring over the cormorant's neck to prevent the bird swallowing the fish when it captures it, and when it finds it cannot do so it returns to the boat and allows its keeper to abstract the fish from its beak.

Erroneous ideas are rife as to the quantity of fish that a cormorant can consume. Some persons assert that these birds eat as much as 21 pounds of fish daily. However, when their assertion is investigated it is found to be only conjecture. The digestive power of a cormorant is regulated by the bird's size; and the quantity of food demolished at one meal by a bird of a given species varies according to the size of its gullet, which limits its capacity for swallowing, being greater in the larger species than in the smaller. In dealing with the voracity of cormorants I might state that one hears most extravagant statements made in regard to their gluttony which, when investigated, prove to be old shiboleths more or less enlarged by the present generation and to which credence is readily given.

As an illuminating instance I may be permitted to mention that on one occasion I engaged in conversation with a representative appointed by a fishermen's association, whose members depend on catching fish for a living. In reply to my interrogatories this fisherman stated that cormorants were able to kill and swallow fish up to 7 pounds weight, and to eat up to 21 pounds weight per day; and that the cormorant could digest a fish in a few minutes. A bird was shot and identified by him as the species referred to (*P. ater*). This bird was placed on a scale in his presence and it weighed 2¾ pounds. When asked if he still maintained that a bird whose total weight was 2¾ pounds could engulf a 7-pound fish, he said that he had never thought of the relative proportions of the bird and the fish before. When further pressed to produce evidence that a cormorant could devour 21 pounds weight of fish per day, and asked to consider the fact that man himself consumes barely 3 pounds weight of food per diem, he stated that his knowledge was mainly obtained from stories which were in circulation when he was a boy and, although he had observed cormorants catching fish almost daily, he had never supposed these stories to have been incorrect.

Observation made by me by frequent and intensive watching of birds proves that cormorants rarely exceed three meals a day, and that the average weight eaten per day is 1½ pounds. The cormorant, *P. carbo*, a species which is sparsely distributed compared with the other species, can, however, dispose of a larger quantity, since it is the largest of all the species frequenting the Australian region. The species that are numerically strongest here are *P. ater* and *P. fuscescens*. The weight of the bodies of these species is between 2½ and 3 pounds, and it is questionable whether they are able to eat their own weight of fish daily. My observations disprove this. Their digestive organs, which comprise but a small portion of the mechanism of the bird, can only cope with a given quantity of material, certainly not more, in the vast majority of instances, than 1½ pounds.

On several occasions I have observed cormorants catching eels, and in one instance a bird was observed, early in the morning, sitting on a log with a length of eel hanging out of its mouth. To prevent it slipping out of its gullet, the bird had to keep its head up in the air. It had swallowed the eel head first, a customary method adopted when swallowing a fish. It was waiting for the fish to be digested. When passing the same spot later in the afternoon, part of the fish was discerned still projecting from the bird's beak, and it would have been dusk ere the bird had finally swallowed its prey, while the process of digestion would have still proceeded during the night.

It is not generally known, but nevertheless it is a fact, that the squabs or nestlings of cormorants are excellent eating, and in slaying them we are simply throwing away part of our food supply. Why the squabs of cormorants are so edible is due to the sweet-fleshed food with which they are fed by their parents, which, as before stated, feed them on crustaceans.

We must also remember that before the advent of the white man in Australia, cormorants preyed upon our fishes, and there was no serious diminution in the fish supply. The fishes were then as plentiful as they ought to have been, and were in the correct quantity so far as the law of nature allowed. White men, in their ignorance, have taken from our waters more fishes than the reserve fertility of Dame Nature could replace, or have destroyed their spawning grounds by draining them, or have deposited noxious materials into or onto them, or have rooted them up with nets, and have as ignorantly expected mother nature to replace them as formerly. But there is a limit, as I have before mentioned, to the reserve fertility of Dame Nature, which, if overstepped, leads to serious trouble in the shape of want of balance. Therefore, see to it that the balance is kept level, and by restocking our waters with those varieties of fish which we are continuously abstracting from them, prevent the undue displacement of nature's balance.

My remarks, so far, have been applicable to the inland breeding cormorants that nest principally in the trees. The following notes apply equally to the inland breeding forms as well as to those which nest on rocks in the sea. I have watched cormorants at sea and in our bays and estuaries, apparently following up shoals of fish fry; but never was I able to discern them devouring the fry, which owing to the insufficiency of their size are not satisfying enough to them. I have often observed them capturing the voracious predatory fishes which were following up the shoals of fish fry and destroying thousands upon thousands of immature fish.

So, after all, we find that in another instance the cormorants were allowing more fish to remain alive than the fishes preying upon the shoal of fish fry would have done had these cannibals not been destroyed by the cormorants. It is therefore safe to assume that the ratio of fish in the shoal that would have been destroyed, but which had been given their lives by the action of the cormorants in killing their enemies, would be in the proportion of several thousands to one. Then again, the cormorants

destroy a large quantity of eels in our estuaries and streams, especially when there is an eel fare, or migration of eels from the sea to the rivers; and it is universally conceded that eels are very destructive to fish ova. Here we have yet another instance of the benefit the sea cormorants are to us. They attack the enemies of our fresh-water fishes' ova at the threshold of their onslaught on their habitats.

Another good point regarding cormorants is that they love to capture the succulent but non-sporting lamprey, that enemy to some of our best fishes, especially the fresh-water varieties, such as the Murray cod and blackfish. The lamprey is an eel-like fish which is provided with a suctorial mouth, devoid of teeth, with which it is able to attach itself to a fish; by rotating its harsh tongue it makes a hole in the skin of a fish, through which it sucks out its life's blood. Lampreys are more plentiful than is generally supposed, and are called "eels" by persons unacquainted with their structure. It is not an uncommon error for such persons to make when they announce that they had captured eels in the River Murray, in which stream none up to the present has been found to exist. Pisciculturalists complain that cormorants destroy young trout in their hatching ponds, but if these are wire-netted overhead a cormorant cannot enter them. Preventive measures are easily adopted in such instances.

The main complaints regarding the destructiveness of cormorants are directed principally to those forms that frequent inland waters. The sea-roaming fish-eating birds, such as penguins, gulls and certain species of cormorants, are not condemned because they do not so readily come under observation.

The great fighting capacity of a trout constitutes the chief pleasure to fly-fishermen, and, if these fish lost this characteristic, trout fishing would lose most of its charm and would be but a mediocre sport. If the weaklings of trout were allowed to propagate their species, these fish would become decadent, and would eventually evolve into sluggish and slow moving creatures, if their natural enemies, which eliminate the least fit to live, were destroyed. It is simply the application of the well-known law of disuse inheritance, causing deterioration and atrophy in the structure. This is instanced in the flightless inactive birds of New Zealand, which, for centuries past, on account of having no ground enemies to cause them to fly up off the ground out of danger, have gradually lost the power of flight, and have become decadent, and are thus consequently disappearing. In our wisdom, therefore, let us prevent, as far as we can, the decadence of our fishes, allowing nature to use its aids to this desirable end, and by so doing, the now despised and outcast cormorants will be relegated to their proper sphere of usefulness.

South Camberwell, Victoria, Australia, February 15, 1927.

NOTES ON THE BREEDING COASTAL AND INSULAR BIRDS OF CENTRAL LOWER CALIFORNIA

By GRIFFING BANCROFT

THE PURPOSE of this paper is to draw from my own experience bits of information which either appear to be new or which seem to be of sufficient importance to deserve repetition. Though no attempt will be made to cover all the field, I will list the breeding birds I know to occur on the small islands of Baja California del Norte on the Gulf side. Isla del Angel Guardia I have not yet had an opportunity to visit.

AUKLETS

Auklets are so far known only from the Pacific side of the peninsula. I have found the Cassin Auklet (*Ptychoramphus aleuticus*) breeding freely as far south as San Geronimo Island. I have both eggs and skins of this species taken for me by Mr. Ed. Seechrist of San Diego, who collected them about April 10, 1927, on San Roque and Asuncion islands. The breeding dates in Mexican waters are very confusing. Early April on the Coronado Islands near San Diego is the time to look for fresh eggs; yet there are young in the burrows of San Roque at that time, while fresh eggs are to be found on San Geronimo as late as the middle of May. Although the birds lay but one egg I took what appears to be a genuine set of two on San Geronimo, May 21, 1926. As far as the eye can tell they were laid by the same bird. Their incubation was identical, barely started.

MURRELETS

It is established that in the more northerly islands of the Mexican Pacific the Xantus Murrelet (*Endomychura hypoleuca*) has its metropolis. What is not so generally known is that the Craveri Murrelet (*E. craveri*) spreads over the entire Gulf, with a center of abundance north of the 28th parallel. On the western side of the peninsula murrelets breed on San Roque Island, but I am unable to state definitely to which species these belong.

Consag Rock, in the Gulf, is probably the most northerly breeding ground of the Craveri. Their eggs have not yet been found there and probably never will be; I merely include it by inference from knowledge of the birds and the country. They breed freely on George Island and on many if not all of the San Luis group. We found them on nearly every island and islet along the western side of the Gulf. Opposite San Esteban the birds were most plentiful. In the spring they are normally to be found in groups of four, two parents and two young. The chicks in early April range from a few days old to almost grown, showing a very irregular breeding season. When the surface of the Gulf is glassy smooth, as it is about half the time in spring, it is seldom that one or more of these little families is not in sight. Apparently they are strictly pelagic from the time the babies are two days old.

In its nesting habits the Craveri seems to make more of an effort to conceal itself than does the Xantus. Many times I have been able to see the latter on its nest and not infrequently have found its eggs under an ice-plant. The Craveri, without exception as far as my experience goes, chooses only such spots as are entirely dark, whether they be in natural cavities or, more often, under boulders or stones. Neither race makes any nest, though the birds often hollow out the sand a bit and sometimes work it into a little mound which helps conceal them.

GULLS

The range of the Southern Western Gull (*Larus occidentalis wymani*), which is not yet fully defined, adjoins that of a race from Scammons Lagoon whose status also is still undetermined. The birds resident on Natividad, San Roque, and Asuncion are similar to those of Scammons. This race may or may not be an intergrade between *wymani* and *livens;* the birds of Cedros, San Benito, and Guadalupe islands and those south of Asuncion have had no critical examination since *wymani* was distinguished. The nesting habits of *wymani* and *livens* have already been compared, in my article in the CONDOR (XXIX, 1927, p. 32). The nests, at least as far south as Asuncion, are consistently those of *wymani.*

On the other hand the Yellow-legged Gull (*L. o. livens*) builds its nests as uniformly bulky in the southern waters of the Gulf of California as it does on the San Luis Islands. There is clearly a homogeneous race there. Its breeding range extends to George Island and even possibly to Consag Rock. It is very plentiful in the San Luis Archipelago. Then there comes a broad gap in which it does not breed, although it becomes very common again farther south.

Egg types show that Western Gulls are strongly inclined to remain to breed in the colonies in which they were hatched. This is a condition which would be apt to make them plastic. So it will not be until they have been collected in numbers from Guadalupe Island to Magdalena Bay and beyond, that their various relationships can be established. All of which opens a fascinating field for banding.

The Heermann Gull (*Larus heermanni*) breeds in the Pacific from San Roque Island south. In the Gulf of California it has a number of established breeding colonies. In Lower California the most northerly is on Isla Raza, though there is one in Sonora on George Island. On Raza is one of the great gull colonies of the world. The island has a maximum elevation of a hundred feet and an area of perhaps four hundred acres. It is marked with gentle ridges separating relatively large flats. On the whole it is covered with soft earth which supports some "sage", though there are many places where the rocks come through.

The nests are placed with apparent indifference to the terrain. Spaced a few yards apart, they literally cover the island. We endeavored to make some estimate of the number but could not agree beyond the figure of a hundred thousand. There might easily be two or three times that many. The birds first excavate a narrow saucer, wherever the soil permits, and build it up with a scanty assortment of small twigs. Their first two eggs are nearly always much darker than the last one. They usually commence to lay early in April.

TERNS

It was my good fortune to sleep three nights within a few yards of a colony of Elegant and Royal terns (*Thalasseus elegans* and *T. maximus*). As long as I remained in my blankets the birds were unaware of my presence and so they revealed to me the most intimate details of their lives and problems. A mixed colony of these terns as a "going concern" is something fascinating to watch. Imagine the birds, thousands of them, sitting as close to each other as is comfortable and all facing the same direction—into the wind. At intervals which, night or day, seldom exceeded fifteen minutes there would be a rising from the nests. They certainly are "nervous". To the accompaniment of incessant shrieking they reach a height of ten or twelve feet and mingle with mates who are drawn in by the excitement. Sometimes it is the whole colony that takes to the air, but more often it is the outer fringe only, to the depth of five feet or so. Then comes the return, which must be rapidly made if the eggs are to be saved from those persistent hunters, the Heermann Gulls. In spite of the confusion every bird, with machine-like precision, drops behind his own egg. I was able

to work out the truth of this with regard to certain individuals. Furthermore, three thousand birds selecting as many eggs could not settle themselves in the time these do unless each one knew definitely where he belonged. While recognizing that pigmentation is a very complicated affair, the value to these birds of the striking variations in the markings of their eggs leaves reason to suppose that nature has supplied them with this as a necessity. If the eggs were less conspicuous or less individualistic it would hardly be possible for the parents to identify them with the speed and the certainty they now show.

While the terns are at rest the gulls maintain a ceaseless patrol. At intervals of perhaps a yard they dot the entire circumference of the colony. Their object is to steal eggs, and they have very little difficulty in so doing. The least carelessness in covering, any exposure to sight on the part of the terns which are on the outer fringe, means the loss of an egg. I watched one gull deliberately poke his bill in from behind and draw out an egg from between the legs of a tern, which seemed to pay no attention to him. Then the robber tilted back his head and drank the contents. Apparently the only compensating device a given tern has is to keep on laying until another bird replaces him on the outside fringe of the colony.

In Lower California waters the Royal Tern lays but one egg. *Elegans* not infrequently lays two. Since Mr. Mailliard published his opinion that the latter species lays but one egg and that when two eggs are found under one bird they have been laid by different females, I took the greatest pains to check my statement and prove it true. I found many pairs of eggs that showed enough variation to argue against their being the product of one bird. But I also found many in which, in the opinion of all the experts to whom I have shown them, the common parentage could not be questioned.

I can make an addition to my remarks on terns in the January, 1927, issue of the CONDOR by reporting the finding in San Ignacio Lagoon on April 13, 1927, of Caspian Tern (*Sterna caspia imperator*) and of Brown Least Tern (*Sterna antillarum browni*). Although the central Gulf region seems to be surrounded by breeding colonies of various species of terns, the Royal and the Elegant are the only ones which ever come into these waters.

SHEARWATERS

On Isla Raza in April, 1925, Mr. A. J. van Rossem and I found old shearwater burrows. This is rather interesting in view of the fact that the fishermen, describing accurately the nesting of the birds, insisted that they bred in the Gulf. However, no species of shearwater has been reported definitely from the northern or central portions of the Gulf, and we ourselves have never seen them though we have always particularly watched for them.

The Black-vented Shearwaters (*Puffinus opisthomelas*) confine their breeding range closely to the borders of Vizcaino Bay. I have a series of eggs taken from Natividad Island March 28, 1924, a normal laying date. These birds are noticeably decreasing in numbers because of the fish camps established on their breeding islands. Dogs, cats, and rats play havoc with them. There are so many empty burrows that fruitless digging becomes discouraging. If a cord be tied to a shearwater and he be allowed to enter a hole he can be pulled from the burrow if it is empty. The presence of a prior occupant will be betrayed by a vigorous and noisy fight.

PETRELS

Seven races of petrels have been found breeding on the islands off the Pacific coast of Lower California. Only two of these, as far as is known, have ever found their way into the central portions of the Gulf. Perhaps it would be more accurate to designate the Black Petrel (*Oceanodroma melania*) and the Least Petrel (*Halocyptena*

microsoma) as birds of the Gulf. Then one wonders why it is that these also range up and down the Pacific, frequenting both waters, while the other species will, conversely, neither cross nor go around the peninsula.

The northernmost breeding record of the Least Petrel is Consag Rock, on which is also the most northerly nesting site in the Gulf of California of the Black. We have found both species on a number of other islands, the San Luis Archipelago and San Esteban, for instance. I have no doubt that in time many more stations will be discovered. The birds are so numerous and so widely scattered all through this inland sea that one would expect to find their colonies on almost every island that offers favorable conditions. The two Gulf forms are always in each other's company on the breeding grounds. The birds are solitary while hunting, but they intermingle on land to such an extent that the natives believe the smaller to be the young of the larger.

The Black Petrel digs no burrow and builds no nest. On the Coronado Islands near San Diego I have often taken it from holes dug by the Socorro Petrel (*Oceanodroma socorroenis*). However, there is no reason to believe other than that the larger bird has appropriated a satisfactory nesting site. The breeding habits of the Least Petrel are the same as those of the Black except that its laying dates are a few weeks later. All three of these races, at least, hole up in pairs for perhaps a month before they lay. After the egg comes, one bird at a time only is found with it. The choice of both Gulf species is a deep crevice or an opening under the weathered rocks. The sites may be either just above high water line or, as on Consag Rock, at an elevation of six hundred feet.

TROPIC BIRDS

The northern record of the breeding of *Phaëthon aethereus* is Consag Rock, in the Gulf. This is also the only breeding ground of these birds in Baja California del Norte, though they nest quite commonly on both George and San Pedro Martir islands in Sonora. It is true that no eggs or chicks have been taken from Consag. Ordinarily, in the absence of specimens actually secured, scientific accuracy would require that the birds be listed as possible or at the most as probable breeders there. But Consag presents such peculiar conditions that circumstantial evidence may safely be accepted. After all, if that be strong enough it is proof. On the other hand, it would be a serious ornithological error to refuse recognition to this breeding colony simply because it happens to be located on a site which cannot be explored.

Consag Rock, rising to a height of 600 feet above the Gulf, is less than a quarter of a mile in diameter. There is an insignificant area where the summit is flattened. The rest of the top is a series of ledges. The sides fall away sharply and without a break clear to the base. A spit of boulders, many of which are ten feet or more across, runs westerly for several hundred yards from the foot. Being subject to tidal overflow it is nothing more than the home of a large herd of sea-lions. Consag itself is apparently of sandstone, weathered and broken almost beyond belief. I saw a stone the size of a man's head rolled from the top. In descending, it gathered behind it an avalanche of loose rocks running into the hundreds of tons. So great was the slide that it buried the lower third of the island in a cloud of dust. No ingenuity or courage would enable a man to work such a surface.

As one approaches Consag, even when distant several miles, curiosity impels many birds to approach the boat. Conspicuous among them are the Tropic Birds. Young and adults, they come in a direct line from the rock, fly around and over the vessel, and then apparently return to their homes. It must be remembered that Red-billed Tropic Birds are either on the wing or else are hidden away in their holes under the rocks. They are never to be found sunning themselves, standing idly, or resting upon the water, as is the custom of many other sea birds. Their weak and poorly developed

legs and feet are not at all suited for any of these purposes. If we combine the two facts, that these birds come from the rock and would do so only in case they had been in holes or other suitable places of concealment, then the conclusion that must follow is that they have found in the loose formation of Consag both shelter and seclusion. We can add to this the presence of juveniles and the exact parallel between the actions of the birds on Consag and of those about other and proven breeding grounds and also the further knowledge that only where the birds are breeding are the conditions on Consag duplicated. To question Consag as the site of a breeding colony would be the veriest quibble.

The breeding season of the tropic birds in the Gulf is very long. Early in March of 1926 we found occupied nests showing every stage of development from fresh eggs to young so large that, while on the nest, we distinguished them from adults only by their lemon colored bills. We found conditions apparently just the same in the latter part of April, 1925. About the same proportion of eggs were fresh on both dates. The nesting sites are under or between rocks or in natural holes and crevices. Height above the water or inaccessibility seems to be of no importance. All that is required is complete concealment. The weathering of stones in this arid country leaves sufficient soft material on which to deposit the egg. Never, in my experience, have I noticed the slightest effort to build a nest. So far from bringing in foreign material, all the sites which have come under my observation have been kept scrupulously clean. (But see Dawson's *Birds of California,* page 1933.)

It does seem as though science should have progressed beyond the point of retaining *Phaëthon* among the Steganopodes. The circumstance that four toes are webbed marks the beginning and the end of resemblances. The inherited psychology of the tropic birds is too consistently and too widely at variance with that of the other families of this order to admit of close allied ancestry. Consider the nesting instincts and the habits to which reference has already been made. The tropic bird will not flush. When disturbed it rattles its mandibles and screams, making a noise that for ferocity and awe-inspiring volume is unequalled among birds.

The tropic bird has a powerful bill closely resembling that of the tern in shape as well as color. I placed an adult tropic bird on a level spot cut off from the sea by a rock about two feet high. The bird could not rise from a standing position nor could it run on its weak legs. So it walked to the interfering stone with its slow and awkward gait. It placed its bill against a rough spot and then, using its feet only to steady itself, bent its neck and hoisted itself bodily with the tip of the beak. It repeated this process until it reached the top of the stone and then launched itself into the air. On another occasion I pulled a bird from its nest and tossed it into the air. It did not recover quickly enough and so fell into the water which chanced to be quite rough. It was thrown against a rock several times and I was afraid it would be killed. But it finally landed and reached a place from which it could fly by using the same tactics as those of the other bird.

Far more important in distinguishing *Phaëthon* from the other Steganopodes are the eggs. Those of the pelican group tend to elongation if not complete ovate shape. They are covered with a thick chalky deposit which becomes badly stained as incubation progresses. They are either white or blue, and always unmarked. The egg of the tropic bird, in so far as it resembles anything but itself, is more like that of a falcon, tending to a spheroid shape, generously pigmented with fine specks varying from brick red to lilac, smooth in texture and definitely with no coating.

BOOBIES

The only booby which nests in Baja California del Norte is *Sula brewsteri.* In 1925 and again in 1926 we found a well established colony on top of Consag Rock.

This is the most northerly breeding point for the bird. On one of the San Luis Islands we found quite a large colony in 1926 which had not been there the year before. These boobies lay two eggs and their laying season begins in the first week of March.

It is interesting to compare the nesting habits of these birds with those of their relatives and neighbors, the Blue-footed Boobies (*Sula nebouxi*) of San Pedro Martir Island in Sonora. The latter build no nest, though they do work earth into the shape and size of a large plate. The desired soft dirt is more often than not in caves or in sheltered places among the rocks. So this booby is usually found nesting under cover, although eggs laid in the open are not rare. Its complement of eggs is also two, but, unlike *brewsteri,* a single egg is often the complete clutch.

The Brewster Booby chooses any bare spot on the rocks which is large enough and smooth enough to hold a nest. The leveled trails once used by the guano collectors suit it admirably. It gathers twigs and large feathers and arranges them so as to form a thin circular nest. There is no attempt to weave any of this material; as a result everything is carried away by the wind long before the young are past the downy age. So a Brewster Booby colony presents the rather anomalous condition of eggs in nests and of young standing on bare rocks.

CORMORANTS

Farallon Cormorants (*Phalacrocorax auritus albociliatus*) are the only birds of this genus which nest in the central Gulf. They are not at all abundant there, San Luis Island being the only place where I have found them. The Brandt and the Baird cormorants (*P. penicillatus* and *P. pelagicus resplendens*) range with the Farallon down the waters of the Pacific. Both Farallon and Brandt are to be found in large numbers though in distinct colonies on both Los Coronados and the Todos Santos islands. The Brandt breeds freely on San Geronimo and only the Farallon in Scammons. The Baird is reported from Chester Rock, not far from the mouth of that lagoon.

PELICANS

An immense colony of California Brown Pelicans (*Pelecanus occidentalis californicus*) exists on the western side of San Luis Island, the only place in central Gulf waters where I have found them. This colony is about a mile long and must contain upwards of five thousand breeding pairs.

MAN-O'-WAR-BIRDS

The Pacific Man-o'-war-bird (*Fregata minor palmerstoni*) seems to be established on one of the islands of the San Luis Archipelago. We found it there in April, 1925, and in March, 1926. Although on both occasions there were a hundred or so in the same locality, we did not find any nests; and I do not believe we would have missed them had they been there. I cannot even suggest an answer to this riddle.

HERODIONES

The breeding of Herodiones in Scammons I discussed in the CONDOR (XXIX, 1927, pp. 40-47). My references there to the San Luis Islands include all the records I have for birds of this order anywhere in the northern half of the Gulf of California, except the breeding of a few Great Blue Herons of an undetermined subspecies at San Felipe. On the Pacific side all of the birds I listed breed in the lagoons below Cape San Eugenio. The shores of these more southerly bays, where not of bare sand, are covered in some places with marsh grass and, except in Pond Lagoon, also with mangroves. The entire surface of the islands in the lagoons supports these small trees. The birds which in Scammons were content with marsh grass as nesting sites show an exclusive preference for mangroves where these are to be found.

The American Egret (*Casmerodius egretta*) breeds at least in San Ignacio Lagoon. It is very rare in these waters; an occasional isolated pair, extremely shy and wary, is all that one sees. In common with the resident Great Blue Heron, this egret will not betray its home. When a man is seen, these large birds fly away, often not to return at all. So it is very probable that their nests are more widely distributed than is generally supposed. Neither the White Ibis (*Guara alba*) nor the Frazar Green Heron (*Butorides virescens frazari*) have been reported north of Cape San Eugenio. Both are abundant resident breeders, at least in San Ignacio Lagoon. The former is quite a bit the more common and the more gregarious of the two, having its breeding colony on one of the large central islands in the bay. I submitted the skin of a juvenile taken in the Lagoon in February, 1927, to Mr. J. L. Peters of the Harvard Museum of Comparative Zoology. He compared it with a series of eastern skins of *Guara alba*. Though he had but one specimen which could match the western bird in size, he reported nothing to warrant recognizing a Pacific race.

RAILS

I have found the Light-footed Rail (*Rallus levipes*) a common resident breeder in the marshes of the San Quintin region. The Sora (*Porzana carolina*) I have found with eggs at San Antonio del Mar. All the lagoons of the San Ignacio Faunal Area have as residents the Clapper Rail that breeds in Scammons (Condor, XXIX, 1927, p. 47). On the other hand, from the delta of the Colorado River to the vicinity of Santa Rosalia there lies a great coastal stretch from which no rails have been reported. I have hunted over a number of marshes, specifically one opposite the San Luis Islands, which seem to be admirably adapted to rails. We neither saw signs of them nor heard from the natives any rumors of their presence here.

SHORE BIRDS

Of the Limicolae only the Belding Plover (*Pagolla wilsonia beldingi*), the Snowy Plover (*Charadrius nivosus*), and the Frazar Oyster-catcher (*Haematopus palliatus frazari*) are to be found breeding in central Lower California waters. The known breeding range of the Belding Plover extending northward includes San Ignacio Lagoon and Scammons. That of the Snowy Plover reaches southward at least to San Ignacio Lagoon on the Pacific slope and to the 29th parallel on the Gulf side. The Frazar Oyster-catcher spreads to both shores of the peninsula and includes in its range the entire Gulf of California, the Mexican coastal islands of the Pacific, and all the sloughs to the northern limit of the San Ignacio Faunal Area. In my opinion, the Black Oyster-catcher (*Haematopus bachmani*) does not breed south of the San Diegan District.

RAPTORES

The Prairie Falcon (*Falco mexicanus*) is so nearly unknown in central Lower California that I have seen but one breeding pair. Mr. N. K. Carpenter took a set of fresh eggs from San Luis Island when there with me in March, 1926. On the other hand, Duck Hawks (*Falco peregrinus anatum*) are abundant on the islands of both waters as well as along the western ocean cliffs as far south as those extend. We have found Duck Hawks breeding, for instance, on Consag Rock, on three of the San Luis Islands, and on San Esteban, San Miguel, Natividad, and San Roque islands as well as at San Antonio del Mar, Cape Colnett, Santa Catarina Landing and Santa Rosalia Bay. They are probably the most evenly distributed bird in this region. Their eggs, three more often than four, are laid late in March or early in April.

The metropolis of the Osprey (*Pandion haliaëtus carolinensis*) is the San Luis Archipelago. From sixty to seventy-five pairs of birds nest there, half of which are on San Luis itself. We did not find them in the Gulf north of this archipelago,

though on the Pacific shore they are abundant from Ensenada Bay to and including Scammons and San Ignacio lagoons and the coastal islands. This is one of the few birds which, inhabiting the coasts and islands on both sides of the peninsula, do so without seemingly being affected in their nesting dates and habits by the intervening land. They lay very early in the year in this region and have feathered young by the middle of March.

RAVENS

The habitat of the Western Raven (*Corvus corax sinuatus*), which is coincident with its breeding range, includes the entire peninsula, coasts and mainland as well. The birds are far more numerous in the western edge of their range than in the Gulf, where I have always considered them exceedingly rare. They build indifferently on cliffs or, in this treeless country, in the giant cactuses. When on cliffs they always seek an overhang, or use a pot hole, in order to escape possible falling pebbles and earth. Their nests are bulky and are lined more delicately than those of any other large North American bird. This lining is most frequently taken from a carcass. I have known the birds to use the hair of a dead cow, horse, coyote and even skunk. They take their entire supply from one source. A lining partly of one material and partly of another is not normal. Both birds carry the nesting material. When hair is not available I have found them substituting decayed sacking and even bright bandanas from a Cocopah Indian's clothes line. They lay their two to seven eggs any time from early in March to late in April. The eggs, which are extremely thin shelled, are laid one a day and require two weeks to incubate.

MARSH SPARROWS

The Marsh Sparrow of Scammons (Condor, XXIX, 1927, pp. 56, 57) (*Passerculus beldingi halophilus*) ranges at least from and including San Ignacio Lagoon to the northerly limit of the San Ignacio Faunal District. In the San Ignacio Lagoon there is also breeding a Large-billed Sparrow (*Passerculus rostratus* subsp.?). I have a nest and set of eggs taken there in April, 1927. The latter bird is as rare as the former is abundant, but in spite of being uncommon it is well established and not of accidental occurrence.

WARBLERS

The Mangrove Warbler (*Dendroica bryanti castaneiceps*), hitherto not reported north of Magdalena Bay, is abundant in San Ignacio Lagoon at least in the spring, and it undoubtedly breeds there, although I have not been fortunate enough to obtain its eggs.

ROCK WRENS

Mr. A. J. van Rossem and I found the Rock Wren (*Salpinctes obsoletus*) in April, 1925, on one of the smaller islands of the San Luis group. In March, 1926, it was abundant on San Luis Island. Mr. van Rossem pronounced the bird true *S. o. obsoletus*. At first thought it might seem strange to encounter this race in such an out of the way spot. But the Rock Wren is one of the few birds that has carried its range without a break to these distant islands. It breeds very early there. I have a record of March 9, 1926, of a nest containing half grown young.

In concluding, I must acknowledge the help afforded me by Mr. Clyde Field and Mr. Griffing Bancroft, Jr., of San Diego, and the uniform courtesies and aid extended by both the Mexican and United States authorities.

San Diego, California, May 23, 1927.

NOTES ON BIRDS COLLECTED IN THE VIRGIN RIVER VALLEY OF UTAH

WITH TWO ILLUSTRATIONS

By VASCO M. TANNER

IN THE SOUTHWESTERN part of Utah, along the Virgin River, may be found some of the most interesting birds of that state. For this region is locally known as Utah's Dixie because of the hot climate and the cultivated semi-tropical fruits, such as figs, pomegranates, raisin grapes and cotton. The elevation of the region is from 2700 feet to 3100 feet and is one of the extreme interior arms of the transcontinental belt, the Lower Austral (in the west, Sonoran) zone.

Some of the characteristic Sonoran plants and animals that are found about Saint George are: creosote bush (*Covillea glutinosa*), mesquites (*Prosopis glandulosa* and *P. pubescens*), prickly-pear (*Opuntia acanthocarpa*), rose flower (*Krameria glandulosa*), yucca (*Yucca angustissima*), shadscale (*Atriplex lentiformis*), desert willow (*Chilopsis linearis*), and Utah sumach (*Rhus utahensis*); Vermilion Flycatcher (*Pyrocephalus rubinus mexicanus*), Gambel Quail (*Lophortyx gambeli*), Road-runner (*Geococcyx californianus*), Western Mockingbird (*Mimus polyglottos leucopterus*), and Phainopepla (*Phainopepla nitens*); Banded Gecko (*Coleonyx variegatus*), Gila Monster (*Heloderma suspectum*), Sonoran Tantilla (*Tantilla nigriceps*), Bicolor Ground Snake (*Sonora semiannulata*), and Agassiz Tortoise (*Gopherus agassizi*); tiger beetles (*Cicindela lemniscata, C. praetextata, C. micans,* and *C. tenuisignata*), tenebrionids (*Trichiasida acerba* and *Cryptoglossa verrucosa*). (See figs. 58, 59.)

Fig. 58. THE VIRGIN RIVER, UTAH, FROM JARVIS FIELD, SOUTH OF ST. GEORGE; MAY, 1922. Photo by Kerr.

Within this arid Sonoran region, where most of the species are derived from the south, the following birds were collected. Mr. Angus M. Woodbury and Mr.

Clarence Cottam have recently collected in this region and the writer wishes to thank them for the privilege of going over their collections of skins and incorporating facts from those sources.

Anas platyrhynchos. Mallard. A common duck on the river south of St. George in the fall of the year. I have taken it in October and November.

Nettion carolinense. Green-winged Teal. Several different years in November I have taken this duck in the swamps south of the little town of Washington.

Querquedula cyanoptera. Cinnamon Teal. One of the common ducks in October and November along the Virgin River.

Marila americana. Redhead. One male of this species was collected in November, by Mr. Woodbury, at the junction of the Santa Clara Creek and the Virgin River.

Marila valisineria. Canvas-back. I have taken this species in October and November in the Washington fields, and on the Virgin River and the Santa Clara Creek.

Ardea herodias treganzai. Pallid Great Blue Heron. A migrant in the fall and spring of the year. I have taken it in May.

Nycticorax nycticorax naevius. Black-crowned Night Heron. Has been seen wading in the muddy water of the Virgin River in the spring time. Two females were collected in the Washington fields in September, 1926, by Mr. Cottam.

Fig. 59. THE VIRGIN RIVER, UTAH, LOOKING NORTHEAST FROM JARVIS FIELD, SOUTH OF ST. GEORGE.

Photo by Kerr.

Fulica americana. Coot. I have collected the coot in April on the city reservoir.

Recurvirostra americana. Avocet. Three migrating Avocets were taken in May, 1917, in the swamps below St. George.

Gallinago delicata. Wilson Snipe. I have found this wader only in the fall of the year along the river, in the swamps, and at times in the ditches in St. George.

Pisobia minutilla. Least Sandpiper. Common in this region during the migrating seasons. Two specimens were taken in September, 1926, by Mr. Cottam.

Oxyechus vociferus. Killdeer. Common in this region most of the year. I took this species on January 1, 1926, in the fields south of St. George.

Lophortyx gambeli. Gambel Quail. A resident of this region. A very useful bird, as the bulk of its food consists of insects and weed seeds. However, many of the farmers complain that it is a pest to the berries and grapes. It nests in March.

Dendragapus obscurus. Dusky Grouse. In the Pine Valley Mountains in September and October.

, **Centrocercus urophasianus.** Sage Hen. In the sage-brush foothills of the Pine Valley Mountains.

Zenaidura macroura marginella. Western Mourning Dove. Common through most of the year.

Accipiter cooperi. Cooper Hawk. One specimen collected on December 24, 1925, at Santa Clara, by Mr. Woodbury.

Buteo borealis calurus. Western Red-tailed Hawk. Frequently killed by farmers in the fall and spring.

Aquila chrysaëtos. Golden Eagle. Two large males have been captured near St. George, in January. One with a wing extent of 79 inches was caught in a hunter's trap.

Falco sparverius phalaena. Desert Sparrow Hawk. A resident of the region.

Tyto alba pratincola. Barn Owl. I have collected this bird in March. It is not common, however, in this region.

Bubo virginianus pallescens. Western Horned Owl. In different parts of the region throughout the year.

Speotyto cunicularia hypugaea. Burrowing Owl. Taken in April at Washington, and seen at Leeds. Not common.

Geococcyx californianus. Road-runner. Resident. One of the most interesting birds of this region and of the state.

Ceryle alcyon. Belted Kingfisher. Throughout the region in the fall months.

Dryobates scalaris cactophilus. Cactus Woodpecker. Two males and one female of this desert species were taken in September, 1926, in St. George, by Mr. Cottam.

Asyndesmus lewisi. Lewis Woodpecker. This species has been taken while migrating in the spring months, March, April and May.

Colaptes cafer collaris. Red-shafted Flicker. A resident of the region. It breeds in the Pine Valley Mountains; specimens in Mr. Woodbury's collection.

Phalaenoptilus nuttalli. Poor-will. I have taken specimens of this species in May. I have found it breeding in the Pine Valley Mountains.

Archilochus alexandri. Black-chinned Hummingbird. In April I have collected migrants.

Tyrannus verticalis. Arkansas Kingbird. A common summer visitant, nesting throughout the region.

Sayornis saya. Say Phoebe. Found about St. George from March until November. I have found it breeding in the Upper and Lower Sonoran zones. It builds its nest in trees, buildings, wells, and bird-houses.

Nuttallornis borealis. Olive-sided Flycatcher. A summer visitant. I have taken it at St. George in May.

Empidonax traillii. Traill Flycatcher. I have taken this species in May. Mr. Cottam collected this species in September, 1926.

Empidonax wrighti. Wright Flycatcher. Specimens of *Empidonax* taken in September I have decided to place under this name because of the white of the throat and wings and the size and shape of the bill. Collected by Mr. Cottam.

Pyrocephalus rubinus mexicanus. Vermilion Flycatcher. Resident in the region some years. I have taken it in December and January.

Otocoris alpestris leucolaema. Desert Horned Lark. A common resident of the region up to the Pine Valley Mountains.

Pica pica hudsonia. Magpie. Occasionally seen about St. George in the winter. I have collected it north of Santa Clara.

Aphelocoma woodhousei. Woodhouse Jay. In this region throughout the winter months. I have obtained it in November.

Corvus brachyrhynchos hesperis. Western Crow. A resident. Does some damage to corn crops.

Cyanocephalus cyanocephalus. Pinyon Jay. Taken in the Upper Sonoran zone of the Santa Clara Creek and the Pine Valley Mountains.

Molothrus ater obscurus. Dwarf Cowbird. Summer visitant.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird. A summer visitant, nesting along the river.

Agelaius phoeniceus (subsp.?). Red-winged Blackbird. Red-winged Blackbirds have been taken by Mr. Cottam, Mr. Woodbury and the writer, and I had thought they were *sonoriensis*; but a study of the most recent literature (van Rossem, Condor, XXVIII, 1926, pp. 215-230) leads me to question this. We may have *nevadensis*; in fact, specimens taken this summer at Provo and Bear Lake, Utah, seem to support this belief.

Sturnella neglecta. Western Meadowlark. A common resident.

Icterus bullocki. Bullock Oriole. A common summer visitant, breeding from April until the middle of June.

Euphagus cyanocephalus. Brewer Blackbird. An early spring and fall visitant.

Carpodacus mexicanus frontalis. House Finch. This species is locally known as the "peach bird". It is common from April until November.

Astragalinus psaltria hesperophilus. Green-backed Goldfinch. A spring and fall migrant. I have collected it in March, and Mr. Woodbury has taken it on December 29.

Passer domesticus. English Sparrow. A pest.

Pooecetes gramineus confinis. Western Vesper Sparrow. Common about St. George in early spring and late fall. Cottam collection, September.

Zonotrichia leucophrys gambeli. Gambel Sparrow. A common winter visitant.

Spizella passerina arizonae. Western Chipping Sparrow. A migrant and winter visitant.

Junco hyemalis connectens. Shufeldt Junco. This junco and *mearnsi* spend the winter about St. George.

Junco hyemalis mearnsi. Pink-sided Junco. A winter visitant.

Melospiza melodia fallax. Desert Song Sparrow. A resident, but most noticeable in the spring and fall. Other species of sparrows have been taken in the Virgin River country, but they need more study.

Pipilo maculatus montanus. Spurred Towhee. Common in winter. In the Woodbury collection.

Pipilo aberti. Abert Towhee. A resident of the Virgin from St. George south. In the Cottam collection.

Oreospiza chlorura. Green-tailed Towhee. I have taken this towhee in the sagebrush valleys about Pine Valley Mountains during the summer months.

Piranga ludoviciana. Western Tanager. A summer visitant. In the Cottam collection, specimens taken in September.

Petrochelidon lunifrons. Cliff Swallow. Common in spring and summer. I have taken it during the breeding season in cliffs along the river.

Hirundo erythrogaster. Barn Swallow. Two specimens of this species taken in the Washington fields in May.

Phainopepla nitens. Phainopepla. A common summer visitant, breeding in May and part of June.

Lanius ludovicianus excubitorides. White-rumped Shrike. A resident. Collected by Woodbury in December and by Cottam in September.

Vireosylva gilva swainsoni. Western Warbling Vireo. Specimens secured in May during the spring migration.

Dendroica aestiva sonorana. Sonora Yellow Warbler. A summer visitant.

Dendroica auduboni auduboni. Audubon Warbler. A spring and fall migrant. Common in all parts of Utah during migration.

Oporornis tolmiei. Macgillivray Warbler. A migrant. Specimens taken in September, 1926, by Mr. Cottam.

Geothlypis trichas occidentalis. Western Yellow-throat. Specimens were taken in the ash and black willow trees at the junction of the Santa Clara Creek and Virgin River in September, by Mr. Cottam.

Icteria virens longicauda. Long-tailed Chat. A summer visitant. Cottam collection, September.

Cinclus mexicanus unicolor. Water Ouzel. A resident of the Virgin River about Zion National Park.

Oroscoptes montanus. Sage Thrasher. A migrant in this region, but breeds in the northern part of the state. One specimen taken at St. George in September by Mr. Cottam.

Mimus polyglottos leucopterus. Western Mockingbird. A common summer visitant in the Virgin Valley about St. George. It arrives in April and departs in November.

Salpinctes obsoletus. Rock Wren. A resident.

Catherpes mexicanus conspersus. Canyon Wren. I have taken specimens of this species in August near Hurricane.

Troglodytes aedon parkmani. Western House Wren. A common summer visitant, nesting in buildings in May.

Telmatodytes palustris plesius. Western Marsh Wren. Taken in the Washington fields in December, by Mr. Woodbury.

Regulus calendula. Ruby-crowned Kinglet. I have taken specimens of this species in March. Only a migrant in this region.

Planesticus migratorius propinquus. Western Robin. A resident.

Sialia mexicana bairdi. Chestnut-backed Bluebird. Specimens have been taken at St. George, Leeds, and LaVerkin, Utah, in the spring months.

Sialia currucoides. Mountain Bluebird. Winter visitant. Taken by Mr. Woodbury in December.

Brigham Young University, Provo, Utah, October 29, 1926.

FROM FIELD AND STUDY

A Strange Meeting with a Flicker.—On the night of December 27, 1925, I had an experience with a Red-shafted Flicker (*Colaptes cafer collaris*) which seemed to me sufficiently unusual to be worthy of record. I was at Frank Stephens' ranch in La Puerta Valley, San Diego County, California, and about an hour after sunset, when it was completely dark and a light, drizzling rain was falling, I started to the pump-house for some water. I carried a flash-light in one hand and a pail in the other, being hatless and coatless at the time. After proceeding for a hundred yards or so I stopped to shift the pail and flash-light. While doing so, I was suddenly struck a sharp blow on the right arm, just above the elbow.

Completely startled, I dropped my pail and light, and instinctively grabbed my arm. To my amazement I found something rather soft, warm and downy, clinging there for all it was worth. Upon returning to the cabin with my prize, it was found to be a male Red-shafted Flicker. It was released soon after being identified, and lost no time in departing. Whether the bird mistook me for a tree, or my light attracted it, remains a mystery to me; at any rate, the fact that it was flying after dark and while it was raining is surely interesting.—JACK C. VON BLOEKER, *San Diego Society of Natural History, San Diego, California, April 29, 1927.*

Correct Portraiture of Some Birds.—In the London (England) *Field* for March 10, 1927, there is an article by Mr. Frohawk on the Short-eared Owl (*Asio flammeus*). Among other remarks the writer points out that this species invariably alights on the ground, never perching in trees; and that, notwithstanding, both in pictures and in museums, the bird is frequently shown doing this.

Looking through what ornithological literature I possess, I find two books that are extensively used by bird-student beginners. In these two, also in a colored picture out of a series, the Short-eared Owl is represented perching on a tree or stump. Is this owl never known to perch on a fence post? I have seen an individual seated on a hay stack.

Recently I purchased *British Birds*, by Archibald Thorburn, with the author's own beautiful illustrations. In this work the Short-eared Owl is portrayed squatting on the ground. In describing the Fulmar (*Fulmarus glacialis*) the same author says: "Like most, if not all Petrels, the Fulmar appears to be unable or unwilling to stand on its feet, and rests when on the ground in a crouching attitude." I presume that does not imply that the petrels, shearwaters, and fulmars cannot and do not walk about in the ordinary manner. But in the above-mentioned beginners' manuals the greater number of pictures represent the birds of this group at rest in an upright posture, or even on one leg.—L. B. POTTER, *Eastend, Saskatchewan, May 30, 1927.*

The Rufous-necked Sandpiper on St. Paul, Pribilof Islands.—In the bird collection of the California Academy of Sciences there is a specimen (no. 23552, male) of *Pisobia ruficollis* (Pallas) collected by G. Dallas Hanna at Northeast Point, St. Paul Island, Alaska, August 27, 1920. This bird was recorded as the Least Sandpiper by Mailliard and Hanna (Condor, XXIII, 1921, p. 95), but recent examination of the skin aroused suspicion that it might not belong to that species. It was sent to the United States National Museum for determination, where examination by Dr. C. W. Richmond, Mr. J. H. Riley, and Dr. H. C. Oberholser settled its specific identity as above indicated.

Pisobia ruficollis is at present in the "Hypothetical List" of North American birds, one record, from Nome, Alaska (Thayer, Condor, XI, 1909, p. 178), being regarded as too questionable, and another (Buturlin, Condor, XII, 1910, p. 44) as too indefinite to be satisfactory. The capture here recorded establishes the species as of at least occasional occurrence within the territory included by the A. O. U. Check-List. Dr. Hanna tells me that the bird was alone when he shot it.—H. S. SWARTH, *California Academy of Sciences, San Francisco, March 26, 1927.*

The Plumages of Certain Gulls.—*Larus hutchinsii* was the name given by Richardson (Fauna Bor.-Amer., II, 1831, p. 419) to a large, pure white gull said to breed on the Albany River in the far north. After passing through various vicissitudes, this name was held by Dr. Dwight (The Gulls of the World, Bull. Amer. Mus. Nat. Hist., LII, 1925, p. 246) to apply merely to an unusual plumage of the second winter of *Larus hyperboreus*. That it is more than this, in fact the regular late winter plumage in both the first and second year, acquired chiefly by fading of the fresh fall plumage, all the specimens of the young of *L. hyperboreus* I have seen lead me to believe; and the same fading and wear produce much the same effect in the only other of the white-winged gulls that I have been able to study extensively, *Larus glaucescens*.

Starting with the juvenal plumage of buffy, mottled with pale grayish clove-brown above, with the wings, tail and under-parts chiefly pale drab (as described by Dr. Dwight), fading goes on with great rapidity, as would be expected with such a plumage of pale grays and browns exposed to a brilliant sun and salt water, as Dr. Dwight showed years ago. As a result, by January there is little of the original color left, and by March and April these birds become almost completely white. These changes are shown in the following specimens in my collection, all of which have the slender, pointed primaries of the first year.

Four young, which I collected at St. Michael, Alaska, in September, 1899, show the juvenal plumage as described by Dwight. One collected by Mr. Wyman at Hyperion, November 24, 1915 (Los Angeles Museum, no. 14142), has faded to a dirty brown; another taken January 28, 1921 (L. A. Mus., no. 4397), is still whiter; and a third, of March 26, 1917 (L. A. Mus., no. 1800), closely resembles the birds I will now describe.

The "*hutchinsii*" plumage is well shown in a yearling male (?) *Larus hyperboreus barrovianus*, which I collected at Hyperion, Los Angeles County, California, March 13, 1922 (no. 32968, coll. L. B. Bishop). It is pure white, except that there are faint indications of the dark markings on rectrices and rump, a few dark shaft stripes on lesser wing-coverts, faint streaks on head and face, and a dull brownish wash on breast and abdomen, most pronounced on the last. A few fresh feathers appearing on back and scapulars are pale ochraceous, barred with dusky. The shafts of the primaries are very pale yellow, white at tip.

Another yearling male, collected at Anaheim Landing, Orange County, May 13, 1922 (no. 32969), is like the last, but still whiter; the abdomen is pale grayish, and the dark markings are perceptible only on the nape and tail feathers, the bird otherwise being pure white.

A young *L. h. hyperboreus* (no. 8535) from Labrador, said to have been taken in November, but probably later in the year, obtained in 1899 from Mr. Sornborger, is an almost exact duplicate of no. 32968, even to the faint traces of the first winter plumage on rump, wings and abdomen, though the abdomen is a little paler and the rump darker.

Clinching the fact that these are normal young birds in the first winter, changed by wear and fading, a yearling female *L. h. barrovianus* collected by Mr. Hersey at St. Michael, Alaska, July 15, 1915 (no. 27255), has assumed the normal second-year plumage, except as follows: The three outer primaries of each wing, the secondaries, and some of the short wing-coverts are snow white, the primaries with yellowish shafts, and, though greatly worn, the pointed, juvenal feathers. The new feathers, including the inner primaries, are of the normal, second-year plumage.

A series of first-year *Larus glaucescens* which I collected in every month from October to August on the coast of California, the summer birds near Moss Landing, Monterey County, show the same white plumage through wear and fading, though not to so great a degree. The latter would be expected, because the fall plumage of the young of this species is darker than that of *L. hyperboreus*. Females taken in June and August and a male in July (nos. 32975, 32976, 32988) have the primaries, rectrices and tertiaries worn to quills, and they, and most of the rest of the plumage, are yellowish white, the rump and the bases of the rectrices and the abdomen being pale drab

gray. Both the July and the August birds are assuming the normal second-year primaries, and scattered second-year feathers on the back and greater wing-coverts. The shafts of the primaries are pale cream color. The breast and most of the head and neck of the June bird are pure white; in the others a few normal, second-year feathers are on these parts. Two yearling females taken in southern California in April, 1917 (nos. 29449-50), show an earlier stage of this wear and fading, the pattern of the plumage, though much faded, being still easily discernible; the primaries are dirty yellowish, but greatly worn. March birds show less wear and fading, and the same is retrogressively true, back to October, when this species reaches the coast of Monterey County.

Birds in the second year, of this gull, can usually be distinguished even on the wing from the first-year birds by their much whiter appearance at least as early as December; and it is hard to believe that in September their general plumage was light mouse gray mottled with white, with the wings and tail close to Quaker drab, as is a female (which had just completed the first annual moult) which I collected near Victoria, British Columbia, September 2, 1925 (no. 38100). But there is no reason to think this bird was abnormal, as I saw many in similar dress, and all the plumage of the almost white December birds shows both wear and fading.

Added to the above specimens of both these species is the fact that I have never seen a spring specimen of either still showing the gray or drab dress of the fall; and I have looked for such birds both in the field and in collections.

The dark-winged gulls show this plumage too, but to a less degree and probably less frequently, the wings and tail fading only slightly as a rule. In a yearling male of *Larus argentatus* collected at Anaheim Landing, Orange County, California, May 15, 1922 (no. 33003), the lower parts and most of the head, hind-neck and wing-coverts are a grayish white, scattered normal second-year feathers appearing in all parts. Another yearling collected by Mr. Chester C. Lamb at San José del Cabo, Lower California, April 20, 1923 (no. 36442), closely resembles this bird but is somewhat darker.

This bleaching and wearing have gone so far in a yearling female *Larus californicus* which I collected at Sunset Beach, Orange County, June 1, 1917 (no. 29469), that only by its size, and the distribution of what is left of the dark markings on the abdomen, wings and tail, could I be sure of the species. Most of this bird is pure white, the shafts of the primaries yellowish to drab-white with narrow longitudinal spaces light brownish drab on the inner shafts of the primaries, and the normally dark portions of the tail are benzo brown. Probably albinism was a partial explanation of this plumage, as the new feathers appearing on the mantle are pale cinereous, and the tarsi, toes and palmations were creamy white. The bill, with a black tip and a chrome yellow spot on mandible at angle, was otherwise creamy white; but the irides were broccoli brown.—LOUIS B. BISHOP, *Pasadena, California, May 30, 1927.*

Northward Migration of Pacific Loons.—On April 10, 1927, while sailing south along the coast of Lower California, the writer observed a scattered, northbound flock of Pacific Loons (*Gavia pacifica*) flying across San Roque Bay, at about longitude 114° 24′ west, latitude 27° 09′ north. A careful watch had been kept throughout the 450-mile trip from San Diego, and this was the first observation of these loons on their annual northern flight, not only during this voyage, but for the season.

Additional records of the movements of this species along the west coast of Lower California may throw light on interesting routes followed by these loons, as the writer observed them during April, 1926, flying overland toward the Pacific Ocean from the headwaters of the Gulf of California, while he was camped at San Felipe.

During years prior to 1927, the first northern flight of Pacific Loons has been noted at a much earlier date off San Diego, and it is possible that some of these earlier birds had arrived over the Gulf-overland route, driven north by the warmer climate on the Gulf. However, many more data are necessary before definite conclusions can be drawn. —LAURENCE M. HUEY, *San Diego Society of Natural History, Balboa Park, San Diego, California, June 1, 1927.*

Records of Two Rare Migrants in California.—In a small consignment of bird skins recently purchased by the San Diego Society of Natural History from Franklin J. Smith of Eureka, California, two specimens, rare in California, were included which would seem worthy of record. The specimens and data are:

Baird Sandpiper (*Pisobia bairdii*); Eureka, California; August 20, 1926; female; "Samoa ocean beach near Manila, Calif."; coll. Franklin J. Smith.

American Golden Plover (*Pluvialis dominica dominica*); Eureka, California; September 10, 1922; male; "in field near Mad River Slough"; coll. Franklin J. Smith. The breast of this specimen is checkered with white and black feathers in about equal proportion.—CLINTON G. ABBOTT, *San Diego Society of Natural History, Balboa Park, San Diego, California, May 28, 1927.*

The Allen Hummingbirds in Golden Gate Park.—In the May, 1925, CONDOR (XXVII, p. 98) Dr. H. C. Bryant has given observations on the nesting of the Allen Hummingbird near the Chain of Lakes in Golden Gate Park, San Francisco. As further evidence of these birds selecting this as a nesting territory, I give the observations of March 26, 1927, in this same region.

We discovered fourteen nests of the Allen Hummingbird (*Selasphorus alleni*). Most of these were in a small area of pine and cypress trees just west of the Forty-third Street entrance to the Park. Of the fourteen nests, two were in the crotches of small branches, and twelve were saddled on branches. The lowest nest was four feet from the ground. It was unfinished and contained one egg. Another nest, containing two eggs, was seven feet from the ground. The others ranged in height up to twenty feet. About half of the nests showed only gray lichens on the outside. The others were mixed with green. On four of the nests we found the female sitting. One of these birds had some building material in her bill. The male birds were found some distance from the nesting site and in a more open space.

No bird demonstration is more interesting and fascinating than the pendulum swing of the male Allen Hummingbird. He swings through an arc of ninety degrees or more, several times, then making a loop at one end of the arc, he suddenly drops down as straight and as swift as an arrow. In a moment he repeats the swing, then suddenly flies straight upward and alights on a branch, sixty or seventy feet above the ground.—MRS. H. J. TAYLOR, *Berkeley, California, April 19, 1927.*

Lark Bunting in Orange County, California.—On April 10, 1927, my wife and I saw a male Lark Bunting (*Calamospiza melanocorys*) on Magnolia Avenue about one mile east of Stanton, Orange County, California. It flew up ahead of us as we drove along the road and, perching in a wild radish plant in a barley field, allowed us to approach within fifty feet, where we observed it for several minutes before it flew away across the field. This is the only individual of this species I have seen in nearly twenty years of watching birds in this region.—JOHN MCB. ROBERTSON, *Buena Park, California, June 3, 1927.*

New Additions to the Yellowstone Park List of Birds.—Black-bellied Plover (*Squatarola squatarola*): The morning of September 24, 1926, was very cold, with the thermometer down to zero, the first really cold weather of the autumn. As I drove by, I noted a single bird of this species on a mud shore where Alum Creek discharges into the Yellowstone River, 7800 feet above sea level and just above the Grand Canyon of the Yellowstone. This bird was comparatively tame. The next day was almost as cold, but in the morning I found two of these plovers at the same location as the day before. On September 26, the cold had moderated considerably, but one of these plovers was seen again at the same location as before. This time it was feeding in company with a Killdeer on small insects picked up from the surface of the exposed muddy shore. I did not see either of these two plovers again. Needless to say both were in dull winter plumage.

This bird has never been recorded before in the Yellowstone National Park. Knight says very rare in Wyoming; only one record and that at Cheyenne in the extreme eastern part of the state on the plains (The Birds of Wyoming, University of Wyoming, Bulletin No. 55, 1902, p. 52). Saunders says his only records for Montana are at Priest Butte Lakes, 1911, and Flathead Lake where it is taken every fall by hunters (A Distributional List of the Birds of Montana, Pacific Coast Avifauna no. 14, 1921, p. 53).

Arkansas Kingbird (*Tyrannus verticalis*): On the afternoon of August 30, 1926, a single individual was seen catching grasshoppers in the Upper Geyser Basin, Yellowstone National Park. This species is recorded by both Knight and Saunders as being common on the plains although not ordinarily seen in the mountains. The history of this bird in the Park has been peculiar. It was originally reported by Dr. George Bird Grinnell as having been seen by C. Hart Merriam in 1872. After that, no more individuals were seen until this one in 1926 and the species was dropped from the list.

Varied Thrush (*Ixoreus naevius*): A single bird in immature plumage was seen drinking at the water trough near the barns back of Old Faithful Inn on September 5, 1926. Knight does not record this species in his "The Birds of Wyoming"; Saunders speaks of it as a resident in northwestern Montana west of the Continental Divide and has only one record of it east of the Divide on the Little Horn and Big Horn valleys. Friends of mine have informed me that it has been seen occasionally during the last three or four years in Bozeman, Montana. The place where I saw it is ten miles east of the Idaho-Wyoming state line and about four miles east of the Continental Divide; somewhat east of Bozeman but much farther west than the Big Horn Valley. Its recent arrival at Bozeman and now in the Park suggests that this species is working east with the settling up and irrigation of the mountain valleys.

White-tailed Ptarmigan (*Lagopus leucurus*): A single individual was seen on the open top of Quadrant Mountain, above timberline and about half a mile from the nearest tree. Knight speaks of this bird (that is, the southern form "*altipetens*") as "resident and quite common in alpine districts"; Saunders speaks of the northern form as common in northwestern Montana and south along the Continental Divide. The nearest previous record has been from the Idaho side of the Tetons about fifty miles south of the present location and ten miles south of the southern boundary of the Park.—M. P. SKINNER, *Jamestown, N. Y., April 19, 1927.*

The Status of the Point Barrow Gull.—Described as a full species, *Larus barrovianus*, by Ridgway (Auk, III, 1886, p. 330) and accepted as such in the second edition of the A. O. U. Check-List, but dropped in the third as inseparable from *Larus hyperboreus*, which it exactly resembles in plumage (Dwight, Auk, XXIII, 1906, pp. 26-30), the smaller bird, whose range was carefully worked out by Oberholser (Auk, XXXV, 1918, p. 472), stands unrecognised by Dwight (The Gulls of the World, Bull. Amer. Mus. Nat. Hist., LII, 1925, p. 248), who still considers the differences too slight for recognition in nomenclature.

MEASUREMENTS OF GULLS

Museum number	Locality	Date	Collector	Sex	Wing (all figures are mm.)	Exposed culmen	Depth of bill at base	Depth of bill at angle	Middle toe with nail
			Larus hyperboreus hyperboreus						
No. 3551, coll. G. Willett	Etah, Greenland	Aug. 11, 1925	McMillan Expedition	♂ ad.	458	61.9	27.3	23.4	64.4
No. 3552, the same	Etah, Greenland	Aug. 16, 1925	McMillan Expedition	♀ ad.	455	58	22.8	21.1	69.2
No. 40563, coll. L. B. Bishop	Craig, Prince of Wales, Alaska	Apr. 10, 1922	G. Willett	♀ 1 yr.	488.5	65	24	22.7	64.4
				Average	467.2	61.6	24.7	22.4	66.9
				Greater than next by	7%	26%	34%	29%	8%
			Larus hyperboreus barrovianus						
No. 4397, Los Angeles Mus.	Hyperion, L. A. Co., Calif.	Jan. 28, 1921	L. E. Wyman	♀ 1 yr.	442	42	18.4	17	60
No. 14142, the same	Hyperion, Calif.	Nov. 24, 1915	L. E. Wyman	♀ juv.	442	50	18.5	16	61.9
No. 1800, the same	Hyperion, Calif.	Mar. 26, 1917	L. E. Wyman	♀ 1 yr.	425	54.6	20	18.3	66.8
No. 40564, coll. L. B. Bishop	Wainwright, Alaska	June 19, 1922	R. W. Hendee	♂ ad.	434	49.2	17.3	18.1	59
				Average	435.7	48.9	18.5	17.3	61.9
			Larus leucopterus						
No. 38623, L. B. Bishop	Miscou Is., N. Brunswick	Dec. 1, 1925	Wil. Bodin	— juv.	391	39.8	14.9	14.3	54.3
No. 38624, the same	The same	Dec. 30, 1925	Wil. Bodin	— juv.	427	46	18.3	16	57.8
No. 38625, the same	The same	Jan. 2, 1926	Wil. Bodin	— 1 yr.	400	44.7	17.4	15.6	52
No. 38626, the same	The same	Jan. 4, 1926	Wil. Bodin	— 1 yr.	389	44	16	14.5	55
No. 39175, the same	Grand Manan, N. Brunswick	Feb. 28, 1926	Allan L. Moses	♀ 1 yr.	392	43.9	15	14.1	52
				Average	399.8	44.6	16.3	15	54.4

From the decision of Dr. Dwight, with his unrivalled knowledge of the Laridae, one hesitates to differ; but the facts, as I see them, are that a very small edition of the Glaucous Gull breeds on the Bering Sea coast of Alaska (those breeding on the Asiatic coast being the extreme of the larger form) and wanders irregularly south to southern California. Of this small bird I have specimens of both breeding birds and young from Alaska, and young which I have collected near Los Angeles; and I have examined other immature birds in different collections north to Victoria. These young California birds differ only in the fading of the plumage from young from St. Michael, Alaska, and disagree with young *Larus leucopterus* of the same age, which they have been called (Dwight, *loc. cit.*, p. 255), by averaging larger in every way, especially as to the bill, by having the base of the bill light, like *hyperboreus*, and by the basal portion of the tail being less mottled with white. Possibly the fact that young *hyperboreus* does occasionally wander to the Alaskan coast, as shown by the Craig bird measured below, and one collected by Laing at Unalaska (Cruise of the Thiepval, Victoria Memorial Museum, Bull. no. 40, 1925, p. 11), may have influenced Dr. Dwight's conclusions, and some such birds crept into his measurements; but to my mind, *L. h. barrovianus* seems a very distinct race.

My thanks are due to the Los Angeles Museum and to Mr. George Willett for use of their specimens.—LOUIS B. BISHOP, *Pasadena, California, May 30, 1927.*

Eversmann Shrike not a North American Bird.—The shrike recorded as *Lanius mollis* by Mailliard and Hanna (Condor, XXIII, 1921, p. 93), taken at sea 260 miles west of Sitka, Alaska, September 23, 1920, is really an example of *Lanius borealis*, a young bird wrongly identified, partly through a misconception of the plumage changes in this species. Having myself collected immature examples of *borealis* exactly similar in appearance, I was able, when I saw this bird, to point out to Mr. Mailliard the mistake that had been made, and he has requested me to publish a correction.

Young *borealis* in juvenal plumage is extremely gray colored, but in the first winter plumage, probably acquired in August and early in September, there is a decidedly brown tinge both above and below. This is an evanescent color that is lost a month or so later when the birds go south, and they are then grayish, or (due to their proclivity for visiting the cities) rather dingy from smoke. Such birds make up the greater part of the series in most collections.

The supposed specimen of *Lanius mollis* is in freshly acquired winter plumage, conspicuously brown colored, and notably different from the gray winter-taken birds from southern points; there are others like it in the Museum of Vertebrate Zoology from mainland points in Alaska and British Columbia. Just what are the true characters of *Lanius mollis* I do not know. The presence of barred upper tail-coverts in *borealis*, a feature supposed to distinguish the young of that species from *mollis* (see Seebohm, Ibis, 1882, p. 374), and the absence of which contributed to the misidentification of the specimen here under discussion, is not a feature to be depended upon.—H. S. SWARTH, *California Academy of Sciences, San Francisco, March 26, 1927.*

Northernmost Breeding Station of the Heermann Gull on the Pacific Ocean, and other Notes from San Roque Island, Lower California.—During a short collecting trip along the west coast of Lower California, Mexico, in the interests of the San Diego Society of Natural History, the writer had opportunity, on April 20, 1927, to spend a couple of hours on San Roque Island, which is situated a mile or so off the rocky coast of the peninsula in longitude 114° 24′ west, latitude 27° 09′ north. This island is low and barren, with an extremely irregular, rocky shore line, and lies in an east-to-west direction. It is approximately one mile long and about one-third of a mile wide at its widest point, with a maximum elevation of not over sixty feet.

A few salt-tolerant plants grow in the more protected situations, the most abundant being a species of ice-plant. Amid this vegetation, on the extreme southeastern part of the island, a breeding colony of about 35 pairs of Heermann Gulls (*Larus heermanni*) was found. The birds were all assembled in a compact group, guarding their nests, which at this date were ready for eggs. In fact, two nests were seen to contain single eggs, proving that within the week full sets would have been completed. The birds in the colony were very tame and permitted the writer to approach within a few rods before they took flight.

The presence of hundreds of Southern Western Gulls (*Larus occidentalis wymani*) in the air, close by, no doubt had some bearing on the behavior of the Heermann Gulls, as the latter seemed loath to give their larger relatives a chance to rob their nests. On taking wing they protested vociferously at the intrusion. Their high-pitched calls did not resemble the hoarse, heavy voices of the Western Gulls and, in comparison, seemed plaintive and weak. They did not leave their nesting site, and, after hovering close overhead while the nests were being inspected, they returned to them as soon as the intruder had retired a short distance.

The largest avian population of the island consisted of the Western Gulls. They, too, were about to lay, as their completed nests were found all about the more level places, with the owners standing nearby. Next in numbers were Farallon Double-crested Cormorants (*Phalacrocorax auritus albociliatus*), of which there was a nesting colony of some 300 pairs on the western end of the island.

Other birds observed during this very short stay included a small flock of some 20 Horned Larks (*Otocoris alpestris enertera*), several pairs of Western Ravens (*Corvus corax sinuatus*), which foraged the beach and were ever on the watch for an unguarded gull's or cormorant's nest, a small flock of Black Turnstones (*Arenaria melanocephala*), and about a dozen Least Sandpipers (*Pisobia minutilla*). Several pairs of Frazar Oyster-catchers (*Haematopus palliatus frazari*) were seen along the western shore, where the surf was breaking, and an American Osprey's (*Pandion haliaetus carolinensis*) nest, perched on the top of an outlying rock, was occupied by two well feathered young. A pair of American Duck Hawks (*Falco peregrinus anatum*) had its nest containing two heavily incubated eggs in a recess of a small cliff, and Cassin Auklets (*Ptychoramphus aleuticus*)—probably the Duck Hawks' mainstay for food—were abundant. Their burrows were everywhere in the soft soil on the top of the island and contained young. A sharp watch was kept for small land birds of the sparrow family, but none was observed.—LAURENCE M. HUEY, *San Diego Society of Natural History, Balboa Park, San Diego, California, May 27, 1927.*

Bird Banding Near Barkerville, British Columbia.[1]—It is too early for a serious report on the little group of banding stations near Barkerville in the Cariboo district of British Columbia; for our work, so far, has amounted to little. We hope to establish a geographical unit of three separate stations, ideally related in respect to the local topography, in the central interior of the Province, hitherto a blank on the banding map. Even the output of three busy stations would be a mere drop in the tides of avian migration which sweep and eddy over so large and so varied an area. But, in addition to the gambler's chance (and it is to the delight of such gambling that the success of banding will be due) of producing evidence on the great migrations, the proposed stations, if they succeed as they should in catching one another's birds, might produce much of interest and importance for their own remote and untouched locality.

These localities occupy the points of a narrow isosceles triangle, the base of which stretches six miles from Bear Lake to Indianpoint Lake and the sides northward about 18 miles down Bear River and Indianpoint Creek to near their junction. The intervening areas are the chief waterways and feeding grounds of the locality, the remainder of which is largely mountain-top, or cold, late, northern forest, representing different zones and small specialized faunas. It will be interesting to see to what extent birds are thus led from one station to another; and local population, its distribution, minor movements and directions of arrival and departure may perhaps be observed to advantage. Furthermore, the owners of two of the stations spend frequent periods above timberline, where they hope to work with an eye to data on vertical migration. At least two and frequently three stations will be in operation at all seasons.

Last summer one station banded nearly 500 birds, while that of Mrs. Joseph Wendle, at Bear Lake, made a good start. Mrs. Wendle has worked hard on the Bear Lake birds for some years, and her records are becoming valuable. Mr. Deane Cochran is now equipping his most interesting location on Indianpoint Creek and is ready to open with the advent of spring.

Among the special problems which the north woods present, that of the cone-eaters is perhaps the hardest. They are apt to remain, literally as well as figuratively, above human blandishments. Free of an empire of cone-studded spires bounded only by the oceans and the northern limit of trees, and adapted through evolutionary ages to manip-

[1] Presented at Annual Meeting of Western Bird Banding Association, Los Angeles, April 16, 1927.

ulate the cones *in situ*, we can offer them little for which they care a snap of their beaks. Even when the grosbeaks descend to lowlier seed-bearing plants, we have had little luck with picked seed or artificial bait, while the redpolls and siskins scorn us completely, with one interesting exception.

The grosbeaks are eager for exposed unfrozen earth in winter, and find it most often at the mouths of sheltered burrows among the roots of forest trees (braving, not always with impunity, the lurking weasels), or under the eaves of trappers' cabins. The siskins, in spring and early summer, have a passion for a certain type of sandy, yellow clay (not gravel), when fresh dug, in spots of which they will pick for hours in large numbers, neglecting quantities of apparently similar material, as well as baits of salt or ashes placed alongside. Failing this, at the same season they are eager for ashes, and will brave the smoke and heat of a dying camp-fire in efforts to obtain them. These are curious gastronomic reactions to the deprivations of the northern winters, comparable, perhaps, to the human trapper who returns from a winter of fish and poor game ready to consume the contents of a three-pound lard pail with a spoon. As many as 125 siskins were trapped at such spots last spring, and a few pine grosbeaks in mid-winter. The siskins rarely repeat.

With the warblers, again, we have to compete with the myriad insects of the north, and the ubiquitous water. Those caught so far have blundered into house traps, machines which, given time, may be trusted to catch most things, including rabbits and skunks.

War against hawks, owls and weasels is continuous. The writer shot five accipiters at one place last summer in about a week. The inexhaustible small rodents are a great nuisance with traps of the Potter type.

It is a pleasant accident that several naturalists should find themselves located in such relationship, as much as 100 miles from the sound of a locomotive whistle.—T. T. McCABE, *Barkerville, British Columbia, March, 1927.*

EDITORIAL NOTES AND NEWS

The present field season is witnessing greater activity, perhaps, than ever before in the penetration of new territory for specimens and information relating to birds. In western North America we happen to know of the following field work in progress by Cooper Club members during part or all of the summer. Doubtless there are many others afield, too. Representing the California Academy of Sciences, Messrs. Joseph Mailliard, H. S. Swarth and R. M. Gilmore have been working certain localities in south-central Arizona. Under the auspices of the San Diego Society of Natural History, Mr. L. M. Huey is visiting certain portions of northern Lower California. In the interests of the California Museum of Vertebrate Zoology, Misses Annie M. Alexander and Louise Kellogg and Messrs. E. Raymond Hall and Jean M. Linsdale have been working certain valleys and adjacent mountains in extreme western Nevada, and Mr. Chester C. Lamb has done collecting as far south as 27° latitude in Lower California. Messrs. Adrey E. Borell and Ralph Ellis, Jr., in the latter's interests, are visiting the Ruby Mountains in extreme eastern Nevada. Messrs. J. R. Pemberton, O. W. Howard and J. Stuart Rowley have explored Salton Sea, with some astonishing results shortly to be announced.

We wish to question the propriety of printing purely systematic contributions concerning birds in other than regular ornithological channels of publication. We must at once acknowledge our own misdeeds in this regard; but we now regret these. No factor, such as speed of publication, seems to us now to compensate for the inconsiderateness of placing one's contributions to systematics beyond the easy reach of future students. We can see little or no excuse to warrant "burying" articles of this nature in such non-ornithological, or obscure, series as the Ohio Journal of Science, or the Proceedings of the Southern California Academy of Science!

An attractive set of cards, portraying in color important kinds of Australian birds, has been published by the Australian Museum (W. T. Wells, Secretary), Sydney. These cards can be had in a set of 30, for 6 shillings, plus postage. The

species represented are those that, many of them, are far-famed, and they have been accurately drawn and well reproduced.

Under the direction of Mr. F. S. Hall, President, and Mr. A. M. Winslow, Secretary, a regional meeting of the Northwest Bird and Mammal Club for the benefit of its British Columbia members was held at the home of Mr. J. W. Winson, Huntingdon, B. C., on the afternoon and evening of Saturday, April 30. Addresses on birds and mammals were given by Drs. Farmer and Kincaid, and Messrs. Edson, Scheffer, Bowles, Kitchen, Brown, Jay, Warburton, Booth and Racey. An enjoyable and instructive meeting was brought to a close at 10:00 P. M. by a vote of thanks to the ladies headed by Mrs. Winson for the pleasant manner in which they had provided for the social features of the evening.

In the death of Dr. H. W. Mills, which took place in San Bernardino, March 26, 1927, the Cooper Club lost an active member, highly regarded as a worthy exponent of our science. He was keenly alert as a seeker after a correct knowledge, firsthand, of the animal life out-of-doors in his part of the country. That he was a true naturalist by instinct may in part account for his success as a student of human behavior and frailties; he had become eminently successful as a physician and surgeon. Club members in southern California have expressed their admiration of Dr. Mills in high terms and his death is widely mourned.

PUBLICATIONS REVIEWED

HOFFMANN'S "BIRDS OF THE PACIFIC STATES".[1]—This review will be brief and to the point; and the point is that Hoffmann's new book is, in the present reviewer's solemn opinion, the most satisfactory popular manual yet provided for its territory.

To speak along the same vein but in other terms, the "Birds of the Pacific States" is, ornithologically, literarily, and pictorially (these three qualities in combination, be it noted) the best yet in its class of one-volume field manuals. It is immeasurably better than nine-tenths of the current "popular" bird books that are widely pushed by their various publishers; for it has been written by an author with conscientious scruples as regards accuracy in making and recording his own field observations, an author who has taken pains to sift previous literature and acquaint himself with current conclusions, and one who has withstood the pressure from publishers to "jump into the market". In this latter respect, Mr. Hoffmann has, to the reviewer's personal knowledge, occupied himself with assiduity on the present undertaking for the past seven years; and the volume is not a large one. No haste here, with inevitably resulting failings.

The reader of Hoffmann's "Birds of the Pacific States" is impressed by the element of conciseness apparent throughout. Furthermore, the species are all treated upon a well-worked-out and uniform plan. The living bird is stressed; this is not a systematic treatise and is not dependent upon bird-skins to make it useable. It is truly a field book.

With regard to illustrations, as our citation of the matter on the title-page indicates, Allan Brooks is the sole illustrator. He presents his work in two types, as colored plates and as line figures in the text. The plates are excellent, save for the overcoloring of some of them which, no doubt, is the fault of the engraver, or the pressman, or both. The line work represents a departure on the part of Major Brooks from his customary style of drawing, and it is toward this that we, therefore, direct particular scrutiny. For the most part, the technique is well adapted for reduced reproduction. Ornithologically, the great majority of the birds strike one as "natural" in postures, as well as in color pattern, in so far as black and white can render them so. In a few cases, however, we can hardly believe Brooks to have been well acquainted with his subjects; for example, the Wren-tit and the Russet-backed Thrush. Come to think of it, we cannot recall any drawing, by anybody, of a Wren-tit that looked anything like the bird! Rather too much background is introduced in a few cases; in one case, that of the Gila Woodpecker, the perspective is such that the bird becomes a Roc as to size!

[1] Birds of the Pacific | States | Containing brief biographies and descriptions | of about four hundred species, with especial | reference to their appearance in the field | by | Ralph Hoffmann | Member of the American Ornithologists' Union | Director of the Santa Barbara Museum of Natural History | With ten plates in color and over two hundred | illustrations in black and white | by | Major Allan Brooks | Fellow of the American Ornithologists' Union | [Design] | Boston and New York | Houghton Mifflin Company | The Riverside Press Cambridge | 1927; crown 8vo, pp. xx + 353, ills. as above. Price, $5.00. Our copy received June 2, 1927.

Despite the above adverse comments, the illustrations are so numerous, their subjects so well selected for the purpose of aiding the amateur, and the average of their ornithological merit so high, that Brooks' work must be weighted almost as greatly as the author's is with respect to the text, the association resulting in, as we said at the outset, the best popular birdbook yet, for use throughout California and the adjacent states.— J. GRINNELL, *Berkeley, California, June 8, 1927.*

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

APRIL.—The April meeting of the Northern Division of the Cooper Ornithological Club consisted of a brief business session held at 2:00 P. M. on April 30, 1927, in room 200 of the Hearst Memorial Mining Building on the University Campus, Berkeley. President Storer was in the chair and a quorum was present.

Names of persons proposed for membership in the Southern Division at the March meeting were read. The following new proposals for membership were read: Frederick R. Collins, 1032 Hyde St., San Francisco, and Louise E. Collins, 1032 Hyde St., San Francisco, by Joseph Mailliard; Edwin F. Coman, Jr., 834 Jones St., San Francisco, by Milton S. Ray; Mrs. Florence Eichwaldt, 721 Sunset Blvd., Hayward, Calif., by H. S. Swarth; Nellie May Tegland, Museum of Paleontology, Berkeley, by Edna M. Fisher; George L. Whitmore, 1094 Euclid Avenue, Berkeley, by Joseph Dixon.

The Chair appointed Miss Margaret W. Wythe to act as Secretary pro tem during May and June, in the absence of the regular Secretary.

Adjourned.—HILDA W. GRINNELL, *Secretary.*

MAY.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held at the Museum of Vertebrate Zoology, Berkeley, May 26, 1927, at 8:00 P. M. In the absence of both president and vice-president, the Club voted that Mr. Joseph Dixon act as chairman. Forty-seven members and visitors were in attendance. April minutes of the Northern Division were read and approved. April minutes of the Southern Division were read.

A communication was read from Mr. Tracy I. Storer, tendering his resignation as president of the Northern Division, because of an extended trip in the east. It being the opinion of members present that the vice-president could satisfactorily attend to the business of the Club during the absence of the president, and that it would be a pleasure and advantage to have the Club represented by its president in eastern circles, it was moved, and unanimously voted, that this resignation be *not* accepted. Appreciation was also expressed for the splendid way in which the president carried through the Second Annual Meeting of the Club at Berkeley, in April.

Mr. Dixon spoke of Mr. Ralph Hoffmann's forthcoming book, "Birds of the Pacific States", as meeting a real need of bird students in being a most helpful field guide.

There being no further business, the program of the evening was announced—"reports of local field trips". Discussions of trips under the leadership of Mrs. A. S. Allen were given by two members of her class. Mrs. A. S. Kibbe reported for trips to the Berkeley hills, Baumberg, Boulder Creek, Ross and Moraga; birds of special interest noted were Western Gnatcatcher, Rufous-crowned Sparrow and Creeper in full song, nesting Killdeer, and Sanderling. Mrs. Mead told of trips over the Joaquin Miller tract and to the Boy Scout camp in Oakland, where on March 29 there was still a large flock of Varied Thrushes and another of Golden-crowned Kinglets, while Red-breasted Nuthatches and Audubon and Lutescent warblers were also conspicuous. She described the Lafayette trip, with a total of 44 birds, and the Alameda trip with a list of 33 birds; also a most enjoyable outing to Point Bonita, where all three kinds of cormorants were observed.

Mrs. H. J. Taylor gave an interesting summary of "six trips afield" under the leadership of Dr. Bryant. Long lists of species were not the main objects of these trips, attention being put upon birds of particular interest as they presented themselves to notice. One trip, to Golden Gate Park, netted 14 nests of Allen Hummingbirds; another trip, to Baumberg, produced a nesting Snowy Plover; while the trip to Lake Merced was notable for the nest of a Tule Wren.

Mr. G. L. Whitmore then told entertainingly of experiences with birds in his garden: his experiments with providing food, bath, and nesting materials; several interesting incidents of his nesting birds, exhibiting a Wren-tit's nest partially lined

with fine copper wire, and a Bushtit's nest containing skeletons of five nestlings destroyed by ants.

Other members contributed items concerning local bird life. Mr. Dixon called upon Mr. W. A. Squires, now resident of Philadelphia, who has returned to this coast after a ten years' absence. Mr. Squires expressed pleasure at being able to attend a Cooper Club meeting once more, and told briefly of interesting birds observed during recent travels abroad.

Although notice was given of no June meeting, at the close of the evening's program it was suggested that such a meeting was desired. A motion was made to that effect, and carried. Adjourned.—MARGARET W. WYTHE, *Secretary pro tem.*

SOUTHERN DIVISION

MARCH.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at the Los Angeles Museum, Exposition Park, on March 29, 1927. President Appleton called the meeting to order at 8:00 P. M., with about twenty-five members and friends present. The minutes of the February meeting of the Southern Division were read and approved. The minutes of the February meeting of the Northern Division were read.

The following applications were read: Samuel G. Harter, 3848 Third St., San Diego, Calif., by L. M. Huey; Theed Pearse, Courtney, British Columbia, by J. Eugene Law; Lucien Reeder Howsley, Avila, Calif., by W. Lee Chambers; Mrs. A. R. A. Morgan, Escondido, Calif., by J. B. Dixon; Mrs. B. R. Putnam, Thorshaon Ranch, Exeter, Calif., by Harry Harris; Harry B. Dillehunt, Jr., 3333 N. Charles St., Baltimore, Md., by A. B. Howell.

The announcement of the second annual meeting of the Cooper Club, which is to be held in San Francisco and Berkeley on April 29 to May 1, inclusive, was read for the benefit of anyone present who had not received a copy from the arrangements committee.

Mr. Chester C. Lamb, who has spent several years working with the birds of Lower California, was the speaker of the evening. He told many things of interest about the birds, the country and the people, beginning with the vicinity of San José del Cabo at the southern end of the peninsula and ending with the Colorado River delta region. Some of the interesting points were as follows: The list of Lower California birds compiled by Dr. Grinnell contains 485 forms. These are nearly all very similar to the birds of our region, the Robin of the Cape district offering the greatest contrast. There are very few tropical birds, the Mangrove Warbler being the only one the speaker saw. In the San José region the White-winged Doves and the San Lucas Cactus Wrens were numerous, the latter nesting in holes in the houses just as readily as in the cactus. In this same region, White-crowned Sparrows were common migrants, but the Gambel Sparrow was rare, while on the west coast of the peninsula both were found in about equal numbers. The Laguna Mountains proved a paradise for Hummingbirds, 200 Xantus Hummers having been counted in one morning before the speaker had lost count. Thousands of Surf Birds were seen at San Felipe Bay, which region is evidently the wintering place for these birds. After the completion of Mr. Lamb's talk many questions and a general discussion followed.

Dr. Miller reported having seen recently a Lewis Woodpecker and a Vermilion Flycatcher in the same locality at Thousand Palms Canyon. When questioned in regard to the colony of Cardinals which has become established near Whittier, he stated that he had collected one of them and he, Dr. Grinnell and Mr. Swarth had each independently identified it as the Virginia Cardinal. This points definitely to the introduction of these birds from the east rather than to the extension of the range of the Arizona Cardinal.

Adjourned.—HAROLD MICHENER, *Secretary.*

APRIL.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at the Los Angeles Museum, Exposition Park, on April 26, 1927. In the absence of both the president and vice-president, Dr. Bishop was asked to take the chair. The meeting was called to order at 8:15 P. M., with about twenty members and friends present. The minutes of the March meeting of the Southern Division were read and approved. The minutes of the March meeting of the Northern Division were read.

The following applications for membership were read: Mrs. Elizabeth M. Fitzgerald, 1721 So. 6th St., Alhambra, Calif., by Roland Case Ross; Mrs. Alma W. Mason, 4223 Latona Ave., Los Angeles, Calif., and Miss Christine H. Darling, 406 East Avenue 39, Los Angeles, by Jessica A. Potter.

It was announced that the next meeting of the California Audubon Society will be at 7:30 P. M. on Thursday, May 12, at the Los Angeles Library. At that meeting several members of the Western Bird Banding Association will tell about the bird banding work and their experiences with the birds. Also, it was announced that the Western Bird Banding Association has made arrangements to act as sales agent for Ralph Hoffmann's "Birds of the Pacific States", which will soon be ready for distribution, and members and friends were asked to buy their copies through that Association, addressing their orders to Mrs. Ella H. Ellis, 910 Grattan St., Los Angeles.

There being no speaker for the evening, the meeting was devoted to the relation and discussion of the bird adventures of the various members present. Mr. Michener was asked to tell of recent happenings in the bird banding work. He reported on the very successful annual meeting of the Western Bird Banding Association on April 16, and told of the interesting papers and addresses and of the exhibition of bird photographs, some of the birds with bands and some without. Mrs. Schneider told of seeing Cassin Purple Finches near Acton recently. Dr. Bishop reported seeing twelve American Egrets and two California Blue Herons at the upper Chatsworth Lake; also a flight of Swainson Hawks near Fairmont in the Antelope Valley. Mr. Reis told of seeing many of these hawks in this same district and of finding their nests in the surrounding mountains in 1921. Mrs. Edwards told of the more than two hundred nests of Red-winged Blackbirds in Mr. Calder's orange grove at Buena Park, most of them in the very small trees. The nestlings are being banded by Mr. Calder. Many other interesting incidents were told.

Adjourned.—HAROLD MICHENER, *Secretary.*

ANNUAL MEETING.—The Second Annual Meeting of the Cooper Ornithological Club was held in the San Francisco Bay region, April 28 to 30, 1927. The program opened with a dinner at the Faculty Club at the University of California, followed immediately by the Sixth Annual Meeting of the Board of Governors. On April 29, two sessions were held at the California Academy of Sciences, with an average attendance of about fifty persons. Dr. Tracy I. Storer presided. The sessions began with an address of welcome by Dr. Barton W. Evermann, Director of the Academy's Museum, which was responded to by Dr. Loye Miller, President of the Board of Governors, C. O. C.

Dr. B. W. Evermann told of "Bird Collecting in California 47 Years Ago", recounting experiences in Ventura County, where numerous changes in the relative numbers and distribution of birds have since taken place. Dr. David Starr Jordan discussed "The Origin of Species, an Out of Door Problem". The unusually large percentage of carnivorous mammals and birds in fossil tar-beds was explained by Dr. Loye Miller as due to the gathering of such predators about entrapped prey; his paper was entitled "The Larger Falcons of the McKittrick Pleistocene". Mrs. Florence Eichwaldt pointed out some of the interesting things which may be learned from "The Maligned Parrot Tribe" in the aviary.

At noon, box lunches were served to the assembly through the courtesy of some members of the Board of Trustees of the California Academy of Sciences. In the afternoon session Mr. John G. Tyler gave some "Glimpses of Present-day Bird-life in the San Joaquin Valley", pointing out the changes (mostly for the worse with respect to birds) which have taken place incident to agricultural and hydro-electric development. Much interesting discussion followed a brief paper by Dr. Loye Miller on "The Migratory Instinct in Geologic Time". Dr. L. B. Bishop then presented papers on "The Status of the Point Barrow Gull" and "Fading in the Young of Certain White-winged Gulls". He was followed by Mr. E. W. Gifford, who spoke of "Birds in Aboriginal Californian Life". Dr. G. D. Hanna then showed several reels of motion pictures dealing with "Birds of the Revillagigedo Islands, Mexico", obtained on a recent expedition of the California Academy of Sciences. The afternoon program concluded with an interesting but abbreviated paper on the "Abundance of Rail and Limicolae on Bay Farm Island, due to State and Federal Protection", by Donald A. Cohen.

The California Academy of Sciences acted as host for an informal dinner to the Cooper Club and its guests at the Clift Hotel. About 85 persons were present. At the conclusion of the dinner "The Buzzard" wheeled in, and later several members responded to calls from the toastmaster, Dr. Miller.

The session on Saturday, April 30, was held in 200 Mining Building, University of California. Dr. Joseph Grinnell pointed out "A Critical Factor in the Existence

of Southwestern Game Birds", namely, the necessity of young quail going to water within a short time after hatching and the adverse effects which drainage and concentration of water for irrigation has had upon the quail population. Dr. H. C. Bryant discussed "Current Economic Ornithological Problems". In a brief consideration of "Some Relations between Man and Birds", Jean M. Linsdale pointed out the real lack of control, by birds, of various agricultural pests, both insect and weed. Miss Hildegarde Howard described "Methods of Handling Measurements in Identifying Cranes" in which she showed that the osteological material from the Emeryville shell-mound revealed the former presence of the Sandhill Crane in considerable numbers. Miss Margaret W. Wythe in "A Survey of Bird-life on the Lower Campus of the University of California" pointed out the changes that have taken place in the last 13 years, and she showed that the activities of landscape gardeners were for the most part inimical to the welfare of the native birds. W. O. Emerson contributed brief notes on the life of William Cooper, father of J. G. Cooper. Dr. W. E. Ritter in an interesting paper entitled "A Neglected Opportunity in Ornithology" pointed out the need of exact knowledge of the vocal activities of birds, and a need of studying in detail the percentages of success and failure in the nesting of even our commonest birds. The morning session closed with "An Exhibition of Early Books on Sport and Ornithology" by Professor C. A. Kofoid. A noon luncheon was held at the Faculty Club and then the program was resumed. Dane Coolidge told humorously of a collecting trip with Loye Miller in "Baja California in '96." Dr. Ralph W. Chaney showed motion pictures and contributed some "Notes on the Habits of the Mongolian Black Vulture." "The Diet of the Barn Owl" was the title of a brief paper by Dr. G. L. Foster. Mr. Jean M. Linsdale showed that there were significant differences between the various subspecies of fox sparrows with respect to weight. Mr. E. Raymond Hall gave some "Observations on Bird-life at Pyramid Lake, Nevada", and he pointed out the unique opportunity afforded in that locality for the study of the White Pelican. The meeting closed with a brief statement concerning the Ridgway Memorial.

An exhibit of important large ornithological works contained in the collection of the Library of the University of California afforded further entertainment for the late afternoon. Of exceptional interest were the two volumes of original paintings by Andrew Jackson Grayson, of the birds of the Pacific Coast, a work now in the Bancroft Library, and which was never published.

In the evening Mr. George Wright hospitably entertained the Club and its friends at his residence on Thousand Oaks Boulevard. Following a buffet supper, Mr. Joseph Dixon gave a vivid talk, accompanied by numerous lantern slides, on "Nesting of the Alaska Willow Ptarmigan", based on field work carried on by himself and Mr. Wright in the Mt. McKinley region during the summer of 1926.

GOVERNORS' MEETING

The sixth regular annual meeting of the Board of Governors of the Cooper Ornithological Club was held at the Faculty Club, University of California, Berkeley, on Thursday evening, April 28, 1927. President Loye Miller and 15 other members were present in person, while 12 additional members were represented by proxy. Minutes of the meeting of April 9, 1926, were read and approved.

W. Lee Chambers reported that the Club, upon the disbanding of the South Moulton Company, had received $2000 worth of copies of "The Birds of California", for sale by the Club. A formal audit of the records of the Business Managers was obtained from the Hassell Audit Company, Certified Public Accountants, through the kindness of D. R. Dickey. This report showed the Club to be in a satisfactory financial condition. Joseph Grinnell offered a statement entitled "Duties and Privileges of the Condor Editor" which was received as the Editor's report. The present officers of the Board and of THE CONDOR were reëlected for the ensuing year. Article IV, Section 1a, of the constitution was amended so as to permit the election of one to three vice-presidents in each Division. A resolution was adopted permanently fixing the funds now in the endowment fund, in that fund. A further resolution changed the fiscal year of the Club to coincide with the calendar year, in order to facilitate the presenting of the annual report of the Business Managers at the annual meeting of the Board of Governors.

The President of the Board was authorized to appoint a committee to consider the question of the incorporation of the Club and to revise the constitution. Adjourned. —T. I. STORER, *Secretary.*

For Sale, Exchange and Want Column.—Any Cooper Club member is entitled to one advertising notice in each issue free. Notices of over ten lines will be charged for at the rate of 15 cents per line. For this department, address W. LEE CHAMBERS, *Drawer 123, Eagle Rock, California.*

BIRDS OF THE PACIFIC STATES—by Ralph Hoffmann. The Western Bird Banding Association has arranged to act as sales agent for this book. Members and friends buy your copies through the Association, thus helping it financially. Address MRS. ELLA H. ELLIS, *910 Grattan St., Los Angeles, Calif.*

FOR SALE—The Ornithologist and Oölogist, vols. VII and VIII, complete; vol. IX, 4 nos. missing; vols. X and XI, 1 no. missing from each; Robert Ridgway's set, with his autograph. The lot for $7.50.—W. E. CLYDE TODD, *Carnegie Museum, Pittsburgh, Pa.*

FOR SALE—Mounted Head of Yearling Bull-Moose: a unique specimen. Ten dollars, f. o. b., express. A few rare sets and very rare singles at a ridiculously low rate.—P. B. PEABODY, *R. 6, B. 55a, New Richmond, Wis.*

WANT TO EXCHANGE — Specimens of small birds and mammals from northern California for those of southern California.—FRANK N. BASSETT, *1338 8th St., Alameda, Calif.*

FRENCH OR GERMAN FIELDGLASSES, $5 up; stereo-prism binoculars, 8-power, $15 up. Mirakel 3 oz. universal focus monoculars with 20-power attachment that converts it into a microscope; 3½-power $10; same in 5-power $12.50. Watch for the new Mirakel 7-power, 7 oz. binocular, $35. Everything in glasses from a Zeiss down. Satisfaction guaranteed after trial, or money refunded.—J. ALDEN LORING, *Box O 182, O-we-go, Tioga Co., N. Y.*

WANTED, FOR CASH—THE AUK, vols. 1-12; vol. 13, no. 3; vol. 14; vol. 15, nos. 1, 2, 4; vol. 16, nos. 2, 3, 4; vol. 17; vol. 26, no. 1; vol. 36. If you have any of these, in original paper covers, perfect, clean and untorn, please state price.—CHARLES F. BATCHELDER, *Peterborough, New Hampshire.*

WANTED, FOR CASH—The Condor, vols. 1 to 7 and vols. 21 to 28; The Auk, vols. 1 to 7 inc.; Bird-Lore, vols. 1, 2, 3, 7, 9, 10, 11.— W. H. BROOMHALL, *Stockport, Ohio.*

WANTED—Will pay ten (10) dollars for a copy of Bent's "Diving Birds", U. S. Nat'l. Museum Bulletin no. 107, in good condition.—JOHN B. HURLEY, *710½ East Chestnut St., Yakima, Washington.*

FOR SALE—Traps for bird banders. W. B. B. A. supply. Last word in traps. Folding 4-compartment Potter Trap, $5. Top-opening Warbler Trap, automatic, $5. Trap doors, consisting of door, frame and tripping treadle, 60c each. — WESTERN BIRD BANDING ASSOCIATION, *418 Elm Ave., Pasadena, Calif.*

WANTED, FOR CASH OR EXCHANGE—The Auk, vol. 6, no. 1; The Osprey, vol. 1, nos. 2, 4, vol. V, no. 8; The Nidiologist, vol. 1, nos. 2, 3, 5, 6 and index, vol. 11, index; Proceedings U. S. Nat. Mus., vols. 11, 12, 13; Bird-Lore, vol. I, nos. 3, 4, 5, 6, vol. V, nos. 1, 3, 4, 5, vol. VI, no. 5, vol. VII, nos. 1, 5, vol. IX, no. 3, vol. X, no. 2, vols. XXIV and XXV, each complete.—J. E. HALLINEN, *Cooperton, Okla.*

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